THE

MODERN SURGEON.

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THE TANJORE MAHARAJA SERFOGI'S SARASWATI MAHAL.

THE

MODERN SURGEON;

OR,

PLAIN AND RATIONAL

Rules,

FOR

THE DIRECTION OF PRACTICE:

FOUNDED ON THE

OBSERVATIONS AND EXPERIENCE

OF THE

MOST DISTINGUISHED PRACTITIONERS.

LONDON;

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ADVERTISEMENT.

In the following pages, an endeavour has been made to give a clear and succinct history of the symptoms, causes, and treatment of many diseases, which usually fall under the care of surgeons. The publication is enriched with numerous valuable observations, drawn from the works of the best writers; and few things have been advanced, for which a respectable authority might not be adduced. As well from inclination as want of room, the author has diligently excluded every thing, which looked like mere conjecture. Anxious that the book should stand entirely on its own usefulness, he has been induced to lay it before the profession in an anonymous form. The

plan differs materially from that of other systems, and, it is hoped, will meet with approbation. An alphabetical arrangement of the subjects has been deemed the most convenient.

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ABSCESSES.

ABSCESSES are of two principal kinds, viz. *acute* and *chronic*, according as they are the consequence of a quick, or of a slow sort of inflammation. When a collection of matter is the result of some specific disease, it is often distinguished by an appropriate appellation: thus, we have *venereal* and *scrofulous* abscesses.

Some cases also receive their names from the particular situation, in which the matter happens to be: thus an abscess in the female breast is termed *mammary*; one in the region of the loins, *lumbar*, &c.

Symptoms of an acute Abscess, brought on by a high Degree of common Inflammation.

1. Just before the commencement of the formation of matter, an exacerbation of all the inflammatory symptoms, particularly of the heat, pain, tension, and throbbing in the part affected, and of the febrile affection of the constitution.—2. These occurrences are followed by opposite changes, viz. a gradual diminution of the pain,

heat, redness, tension, and throbbing.—3. If the abscess be large, or deeply situated, shiverings are at this period very apt to occur.—4. One part of the swelling assumes a more elevated conical appearance than the rest, and the abscess is now said to *point*. The skin in this place is whiter and thinner than elsewhere; the matter indeed being often plainly visible under the cuticle.—5. When the abscess does not lie too deeply, a fluctuation of its purulent contents may be felt on handling two opposite points of the swelling.

CAUSES.

Abscesses are the consequence of an inflammation, which rises above a certain pitch, and puts the vessels of the part into a state, in which they form pus, by a process analogous to secretion. Therefore, any thing which has the effect of giving rise to inflammation, may be the cause of suppuration, or an abscess. In some constitutions, collections of matter will arise from slighter causes, than in other habits, in which so great a tendency to inflammation does not prevail. Hence, in one patient, a blow may bring on high inflammatory symptoms, which terminate in an abscess; while, in another person, a similar injury may merely create a little soreness and inflammation. As the occasional causes of acute abscesses are the same as those of

inflammation in general, we need say no more about them till we speak of *Inflammation*.

With respect to specific abscesses, the venereal originates from the irritation of the syphilitic virus, which is introduced into the system through the absorbents. Scrofulous abscesses are excited by the same kinds of causes as bring on common abscesses; and their assuming this particular character is entirely dependant upon a previous disposition of the constitution to scrofulous disease. It is observed, that in strumous habits, inflammations, swellings, sores, and abscesses often appear to originate from the most trivial causes, such as would not occasion the smallest harm to the generality of persons. Scrofulous abscesses are for the most part *chronic*, and therefore we shall not dwell upon them at present.

TREATMENT OF ACUTE ABSCESSES.

1. The process, by which they are made to burst spontaneously, being quick, they need not in general be opened. The patient avoids the pain of an incision, and the case gets well with equal, if not greater expedition.

Several exceptions to this rule prevail: whitlows, for instance, should always be opened as soon as they are known to contain matter; for the pus often cannot readily make its way to the

surface of the skin, owing to the tendinous theca which confines it. Therefore, if left alone, it would spread upon the hand and wrist, under the fasciæ of those parts, and prove a source of serious and extensive mischief. All abscesses under fasciæ, in any situation whatsoever, should be opened soon; for the matter cannot make its way through tendinous expansions till after a great length of time, during which the patient's sufferings would be protracted, and the collection of pus become very large and widely diffused. All abscesses likewise, which threaten to burst into the chest, or make ulcerated openings into the joints, abdomen, &c. cannot be opened too soon after matter is actually formed. Abscesses upon the surface of the brain should also be opened without the least delay, the pressure of the matter in that situation being highly dangerous.

2. The best method of discharging the contents of abscesses is to puncture the swelling with a lancet. The opening should be made where the skin is thinnest, and, if possible, where the matter can readily flow out by its own gravity as fast as it is formed. This gives the cavity of the abscess an opportunity of contracting, while granulations complete the obliteration of it.

3. A second method of opening abscesses is by destroying a piece of the skin with caustic.

This is seldom advantageous; perhaps never in cases of acute abscesses. It is more painful than the use of the knife or lancet, uncertain in its effect, and productive of a large scar, which would be highly objectionable in many situations. A few abscesses attended with much induration at their circumference, and an imperfect indolent kind of suppuration, may perhaps admit of this method. Here it may do good upon the principle of quickening the action of the vessels in the hardened parts around the matter. Upon the whole, however, we entertain an unfavourable opinion of the plan.

4. A third way of opening abscesses is by means of a seton, which is passed through a portion of the side of the cavity containing the matter: this plan is never proper in acute abscesses: it came into vogue from a fear of allowing all the matter to escape at once, which certainly seems to have been attended with alarming and fatal effects in some large chronic abscesses. But it is only to these last cases that a seton is at all applicable; and its having sometimes been advised, for phlegmonous acute abscesses has altogether proceeded from error and want of discrimination.

5. Poultices are the common and best applications to acute abscesses, both before, and for some time after an opening has either taken place

of itself, or been made by the surgeon. Those made of bread and milk, or of linseed meal and hot water, are usually chosen. The first is so well known, that we shall not describe the way of making it. The second is formed by gradually dropping the linseed powder into the hot water, and stirring it, till the mass is of the proper consistence. A little olive, or sweet oil, is sometimes added, to render the poultice less apt to stick and become soon hard.

Poultices are sometimes spread on linen; sometimes on tow. They should not be made too thick, as their weight is occasionally objectionable when the parts are exceedingly tender and irritable. When the discharge is profuse, they should be changed two or three times a day. Their application is to be desisted from, and common dressings employed, when the discharge is not considerable, and the case puts on the appearance of an ordinary ulcer.

6. Fomentations are also of service in abscesses, by diminishing pain, promoting the progress of the matter to the surface, and favouring all the actions, which lead to the production of granulations and cicatrization.

7. While the case is attended with much surrounding active inflammation, venesection, topical bleeding, aperient and saline medicines, may be proper. After the abscess has burst, or been

opened, a change of treatment is generally requisite, to counteract the weakening effects of the discharge, if the collection of matter has been large. Bark may be given with porter, wine, cordials, &c. according to the degree of debility. Plenty of nourishment is to be allowed.

8. In every stage of any considerable abscess when the pain is very severe, which is always the case about the time when the suppurative process begins, opium is proper.

Abscesses of the Antrum.

SYMPTOMS.

Pain resembling tooth-ach, but extending to the nose orbit, and frontal sinuses, and lasting much longer than a common tooth-ach. At length a hard circumscribed swelling begins under the os malæ, spreads over the whole cheek, and tends to point; the external parts also partaking in the inflammation and suppuration.

The matter sometimes takes another course, and escapes either through the palate, sockets of the teeth, or the nostril; the discharge in this way preventing the tumor from pointing and bursting upon the face.

CAUSES.

An imperviousness of the opening, by which the antrum naturally communicates with the nose, and a consequent accumulation of mucus

in the sinus, followed by inflammation, &c.; blows upon the cheek; carious teeth; inflammation of the pituitary membrane from violent colds, &c.

TREATMENT.

1. Every abscess of the antrum, as soon as its existence is known, should be opened without the least delay, lest great part of the upper jawbone be destroyed by caries and absorption, and the cure be rendered impossible, till after an immense time.

The best plan of making such an opening into the antrum, as will answer the purpose of hindering an accumulation of matter, is to extract the third or fourth grinding tooth, counting from before backward, and, if necessary, to pierce the bottom of its socket with some such instrument as a small gimlet, so as to make a free aperture into the antrum above.

When any grinding tooth is carious, its extraction is to be preferred to that of a sound one. Indeed, success generally requires the removal of every carious tooth, whose fangs approach the seat of the disease.

2. After the matter has been let out, a little stopper, or tent, should be put into the opening, and taken out once a day, for the purpose of giving vent to the discharge.

3. The cavity of the antrum may also be washed out with a little warm milk and water.

4. When the bone is carious, a cure cannot happen till the exfoliations are loose enough to be taken away; when, if necessary, incisions must be made to effect this important object.

5. In old people, where the grinding teeth are lost, and their sockets obliterated, a perforation of the antrum must be made above the alveolary process.

Abscesses of the Anus, or Fistulæ in Ano.

SYMPTOMS.

Abscesses about the anus present themselves in different forms.

1. Sometimes the attack is made with symptoms of high inflammation; with pain, fever, rigor, &c. and the fever ends as soon as the abscess is formed; the matter, though it may be large in quantity, is good; and the swelling is hard and uncircumscribed.

2. Sometimes, the external parts, after much pain, fever, sickness, &c. are attacked with considerable inflammation. But, there is none of that circumscribed hardness, which characterized the preceding tumor; instead of which, the inflammation spreads widely, and the skin wears an erysipelatous appearance. The disease is more superficial; the quantity of matter small; and the cellular membrane sloughy to a considerable extent.

3. Sometimes the case exhibits, what has been termed a gangrenous suppuration, in which the cellular membrane is affected in the same way as it is in the disease called carbuncle.

The skin is of a dusky red, or purple kind of colour, and, although harder than in a natural state, yet it has not that degree of tension, which occurs in the two preceding cases. The patient has generally at first, a hard, full, jarring pulse, with great thirst, or very fatiguing restlessness. If the progress of the disease be not stopped, or the patient relieved by medicine, the pulse soon changes into an unequal, low, faltering one; and the strength and the spirits sink in such manner, as to imply great and immediately impending mischief. The matter, formed under the skin so altered, is small in quantity, and bad in quality; and the cellular membrane is sloughy throughout the extent of the discolouration. The patient's habit is almost always bad, or has been rendered so by intemperance.

Besides the affection of the skin, and cellular membrane about the anus, in these three different cases, the patient often suffers other complaints—retention of urine, strangury, dysury, bearing down, tenesmus, piles, diarrhœa, or obstinate costiveness.

Abscesses about the anus, when left alone,

burst in various places; sometimes in the buttock at a distance from the anus; at other times close to this outlet. Sometimes the discharge is made from one, sometimes from several orifices. When the matter makes its escape by one or more openings through the skin only, the cases are called *blind external fistulæ.* When the discharge has been made into the cavity of the rectum, without any orifice in the skin, it is a *blind internal fistula.* When there is an opening, both in the skin, and in the intestine, the case receives the appellation of a *complete fistula.*

CAUSES.

Any thing which has a tendency to excite inflammation about the anus; and, therefore, various kinds of external violence may become a cause, as hard riding, bruises, &c. In general, fistulæ in ano originate to all appearance spontaneously, or, at least, from internal causes, which cannot be clearly investigated. Pott speaks of intemperance and gluttony, as tending to bring on some species of fistulæ.

TREATMENT.

1. The absurd use of the term fistula in ano, as applied to every collection of matter about the anus, has paved the way for the most unjustifiable methods of treatment. Fistulæ, strictly denote deeply-penetrating, narrow-mouthed ul-

cers, attended with much callosity, and indisposition to heal. It is true, abscesses about the anus, like all other abscesses, are surrounded by a degree of hardness, the effect of inflammation; but this bears no resemblance to callosity, or any thing else, which ought to be devoted to destruction. After the abscess is opened, it spontaneously disappears, and gives no further trouble. The idea of a fistula carried with it that of callosity, and induced the old surgeons to take the most potent measures for destroying what they considered as removable in no other manner. The actual and potential cautery, the knife, and escharotics, were employed without mercy; and whatever part of the buttock felt indurated, never escaped destruction.

2. The writings of Pott effected a most beneficial change in this part of practice, and principally by merely representing fistulæ in ano in the light of common abscesses; which they generally are.

Experience having taught, that abscesses about the anus cannot commonly be prevented from bursting, the practice is to promote suppuration, and generally open the collection of matter as soon as its existence is ascertained; after which, the case is regarded and treated like a sore.

3. When the disease is of the phlegmonoid

kind, a soft linseed poultice is the best application, and the opening in this instance need not be made till the skin has become thin, as there will then be left less hardness after the discharge of the matter. This kind of tumor is generally found in full sanguine habits; and which, therefore, if the pain and fever be violent, will bear bleeding and purging. Such evacuations, however, especially bleeding, are not often admissible in erysipelatous cases.

4. When the inflammation is erysipelatous, the quantity of matter is small, and the disease is rather a sloughy state of the cellular membrane, than an imposthumation. Therefore, the sooner an opening is made the better, as the matter will not point, and the disease will, if left alone, continue to become more diffused.

5. When the skin wears a dusky purplish-red colour, has a doughy unresisting kind of feel, and is very little sensible; attended with an unequal faltering pulse, irregular shivering, prostration of strength and spirits, and an inclination to doze; the case is formidable, and often fatal. The habit is bad from nature or intemperance. There is no need for evacuation of any kind. Tonics, cordials, &c. are necessary. The part must be well fomented, a deep incision should be made into it, and such applications made as we shall advise, in treating of *Gangrene.*

6. The strangury and dysury, occasionally

attendant on fistulæ in ano, are mostly relievable by bleeding, and the use of gum arabic and nitre. The retention of urine, arising from irritation, may be remedied by evacuations and anodynes, bleeding, purging, the warm bath, and opiate glysters. Pott censures the employment of the catheter in this instance.

A painful tenesmus may be relieved by joining with a dose of rhubarb some warm anodyne medicine; and when this plan fails, a glyster of starch and opium is almost infallible.

The bearing down in women admits of relief from similar means.

When there is obstinate costiveness, and the bowels are filled with hardened feces, bleeding, laxative glysters, and a low, cool regimen, are the proper remedies.

6. Though the rectum is supposed to be necessarily concerned with every fistula in ano, it is not always interested. Sometimes, after the abscess has been opened, it heals with proper dressings, like any other sore, and there is not the slightest occasion to cut or meddle with the intestine. The cavity is not to be crammed with hard irritating dressings, but with such as are light and simple.

7. When, however, the matter lies close to the gut, a division of this part is generally right at the time of making an external opening into

the abscess. The design of the operation is to divide the rectum from the verge of the anus, as high as the top of the hollow, in which the matter is formed, so as to lay the two cavities of the gut and abscess into one. Thus an open sore will be made, which will heal, while the hollow sinuous one would not.

8. The curved, probe-pointed knife, is the most useful for the purpose. This introduced into the sinus, while the surgeon's fore-finger is in the rectum, will enable him to divide all that will require division. If there be no opening in the intestine, the smallest degree of force will thrust the point of the knife through, and make one. If there be one already, the same point will find and pass through it. In either case, it will be received by the finger in ano, and being brought out by it, must necessarily divide all that is between the edge of the knife and the verge of the anus.

9. Immediately after the operation, a soft dossil of lint is to be introduced, from the rectum between the lips of the incision, as well to repress any slight hemorrhage, as to prevent any immediate closure of the wound. The rest of the dressings are to be light.

10. The first dressing should be allowed to remain until a beginning suppuration renders it loose enough to be taken away with ease; and

all the future ones should be as light, soft, and easy as possible. The aspect of the disease will then gradually improve from day to day, and a cure follow, without any recourse to red precipitate, or any other irritating application.

11. When an abscess near the anus has burst by several orifices, and an equal number of sinuses present themselves, these are all to be distinctly opened with the curved knife, and any very ugly angle of skin, thus made, is to be cut off. These steps are necessary, in addition to the operation of laying the cavities of the gut and abscess into one, as already described.

12. When the case is a *blind internal fistula*, an induration may generally be felt, indicating where the cavity of the abscess lies. Here the surgeon is called upon to make an external opening, after which the proceedings are not different from those above.

13. Some cases occur, which really merit the epithet of *fistulous*, all the parts being so hardened, or diseased, as to be incapable of being healed in that state, and emitting every day a thin sanious discharge.

14. These instances are of two kinds; one depending on neglect, distempered habit, or bad treatment; the other arising from diseases, which are at some distance from the anus, in the higher and more remote parts of the pelvis,

about the os sacrum, or lower lumbar vertebræ. The first often admit of cure ; the latter seldom. The first require the sinuses to be opened, so as to hinder all lodgment of matter, and the cavities to be opened fairly into the intestine. The internal parts of the hollows may be slightly scarified, but not dressed with escharotics. Incurably indurated flaps, &c. may be cut off. The dressings are to be soft, easy, and light. When loose fungous flesh appears on the sore, the lunar caustic will repress it. When the bad state of the case is owing to the fistula having been crammed with irritating dressings, leaving such practice off will produce an opposite change. The disorder of the constitution, depending upon ill management of the local disease, will also vanish when a more judicious plan is followed.

Mammary, or Milk Abscess, and other Abscesses of the Breast.

SYMPTOMS.

The mammary abscess is an inflammation of the breast, ending in suppuration. The case is attended with considerable pain and fever, and the abscess is generally surrounded with a surprising degree of induration. It mostly arises soon after parturition, or about the time when an infant is weaned.

CAUSES.

The common cause is said to be the breast being suffered to become too much distended with milk, in consequence of this fluid not being duly drawn away by the suction of the child. However, if it be true, as some physiologists maintain, that much milk cannot lodge in the breast, but, that it is secreted at the time of its separation, the disease must rather be owing to too much blood being determined to the affected part. Yet we will not deny, that there may exist such a distention of the lactiferous tubes, as may tend to bring on inflammation.

Women, who have had no children, are also liable to abscesses of the breast from external causes, such as blows, exposure to cold, or in consequence of anger, fright, &c.

TREATMENT.

1. For the removal of the inflammation and hardness attendant on the abscess, antiphlogistic means are indeed necessary, though seldom effectual unless aided with external emollients, fomentations, poultices, and gentle friction with a warm wet sponge. A chief object is to procure an evacuation of milk from the breast; and this the foregoing means tend to produce: but while things allow it, the milk should

always be drawn off by suction, or with cupping-glasses. In this way, the progress of the inflammation to suppuration might often be stopped. The use of leeches should never be omitted.

2. These cases being attended with severe pain, opiates are generally necessary.

3. When the inflammation has risen to a certain pitch, the formation of matter cannot be prevented, and the surgeon is obliged to be content with merely applying emollient poultices.

4. Milk abscesses sometimes give rise to obstinate ill-looking sores, which put on a very malignant aspect, and resist all plans of treatment. They are mostly owing to too early and large an opening having been made in the abscess. In these cases, it is a general maxim of the highest importance, not to make an opening, before most of the hardness is gone, and to do this by the mere puncture of a lancet. No troublesome consequences will then ensue; and the opening will heal in a few days.

5. Sometimes, elevated parts of the swelling present a thin shining appearance of the skin, threatening to burst. When much hardness yet exists, these places ought to be covered with compresses wet with the saturnine lotion, so as to protract for a time their bursting, and keep the poultice from coming into contact with them.

Should they break, notwithstanding this method, the opening should be covered with a pledget, and be by no means enlarged.

6. The making of an opening into the abscess can seldom, however, be delayed, till the whole of the hardness is gone, and must generally be performed, when most of the induration has disappeared. A small puncture with a lancet will be quite sufficient, and it should be made as far as possible from the nipple. All the matter should not be pressed out. A little bit of lint may be put between the lips of the wound, and taken out two or three times a day, to let the matter escape. As long as much discharge and induration prevail, emollients are to be continued; but afterwards, common dressings.

7. Sometimes, after an opening has been made, several other spontaneous apertures are formed, and emit matter. Sometimes the abscess becomes fistulous, attended with a degree of induration, and a thin fetid discharge. Here, the hardness must be dispersed by applying hemlock poultices, and then the fistula will heal. In other instances, a milky fluid continues to be discharged, though no hardness remains. Here the treatment should be a spare diet, gentle compression of the breast, and mild evacuations.

8. The indurations, left after milk abscesses,

may generally be cured by hemlock poultices, frictions with camphorated mercurial ointment, together with the internal exhibition of calomel, hemlock, and other alteratives.

9. The breast is subject to other sorts of abscesses. Sometimes they form in the cellular substance between the pectoral muscle and the glandular substance of the breast; being somewhat difficult to detect. They generally arise slowly, without much pain, and last a great while, without creating any outward fluctuation. They mostly contain a caseous watery matter. Sometimes the matter is contained in a cyst, which at length projects outwardly, and admits of being opened. But still the matter cannot be reached unless the instrument be introduced to a considerable depth. Sometimes the matter makes its way to a place, which was not in the least suspected of being the seat of such an abscess; the pus diffusing itself widely in the cellular substance, and distending the whole breast. The part has rather a reddish appearance, and an œdematous feel. Sometimes the matter makes its way into the thorax, and produces similar symptoms to those of hydrothorax and empyema. The diagnosis is exceedingly difficult.

10. The breast is also subject to lymphatic swellings. These are occasionally attended

with an indistinct fluctuation, and emit, when opened, a clear limpid fluid. The proper treatment is, after opening them, to apply digestives, and exclude as much as possible the external air.

11. Another abscess is not confined to women in the puerperal state, nor to those who suckle. The matter lies so deep as to render external applications ineffectual. The inflammatory stage is tedious. At length, it bursts, but does not heal. The cavities formed by the matter are numerous, running in various directions, and being filled with a soft fungus of a purple colour. Hectic fever is excited, and the breast increases in hardness.

12. The sinus, from which the discharge is made, is to be laid open to its termination, however deep this may be. The surface of the wound is to be examined; and the orifices of other sinuses being found, they are to be laid open to their end. Any part of the mamma, rendered pendulous by such incisions, is to be cut off.—*Hey.*

Chronic Abscesses; Lumbar, or Psoas Abscess.

Chronic abscesses denote such as arise without any symptoms of acute inflammation, without any particular redness of the surrounding parts, or skin; without any throbbing; without

any manifest increase of heat, in the seat of the disease. They are rather attended with a sense of weight and uneasiness, than with that of severe pain; and, if left alone, they often acquire an enormous magnitude before they burst. They are sometimes connected with scrofula; frequently not; sometimes they proceed from blows, falls, &c.; often from no cause, which can be rationally explained. In whatever situation, they all have a resembling character, and demand much the same mode of treatment. An account of the lumbar abscess will, therefore, serve as a description of all.

Symptoms of the Lumbar, or Psoas Abscess.

An incipient lumbar abscess may be suspected, if the patient experiences a dull, constant uneasiness, and sense of weakness about the loins; if such uneasiness be aggravated by raising and rotating the thigh; if there be much difficulty in standing quite erect, or in lying down at full length; and especially, if, with these symptoms, the patient be of a delicate, or scrofulous habit, and feels a degree of weakness in walking. In general, however, the commencement of the disease is so insidious, that an abscess is not known to exist, till the quantity of matter is so considerable as to form an external swelling, either above or below Poupart's ligament;

somewhere in the thigh; or near the anus. At this period, a new train of sufferings usually begin; the patient suffers nocturnal exacerbations of fever, with frequent rigors, languor, and loss of appetite, emaciation, night-sweats, and other hectical complaints. Sometimes, however, the swelling is large; but, the health apparently unaffected. At length, the distention of the matter makes the cyst and skin ulcerate, and the contents of the abscess are discharged. But, instead of relief being the consequence of this event, a violent irritation invades the whole cyst of the abscess; a vehement attack of fever, with diarrhœa, delirium, &c. ensues, and carries the sufferer off. The seat of the matter is generally in the cellular substance about the psoas muscles; whence it gradually spreads downward as it increases in quantity. The disease is sometimes complicated with a caries of the vertebræ.

CAUSES.

The disease of the bone we suppose to be generally an effect. The formation of lumbar and all chronic abscesses, being at first generally insidious, the causes are often obscure. Sometimes, a strain, a blow, or exposure to damp or cold, may be assigned. Often, however, no reason can be given for the origin of the dis-

ease. In particular subjects, especially those of a scrofulous habit, collections of matter are apt to arise from causes, so slight as not to attract observation, or, when adverted to, so trivial, as to excite scepticism.

TREATMENT.

1. Chronic abscesses having little disposition to burst, before their size is enormous, a chief indication is always to open them as soon as they are known to exist.

2. Large lumbar abscesses, and all analogous chronic collections of matter, when very considerable, must not have a more ample opening made in them, than is necessary for the escape of the contents. Were a different practice pursued, the matter would all be suddenly discharged, the whole inner surface of the abscess would inflame, and the patient be soon carried off by a train of violent constitutional symptoms.

3. It is therefore a common plan to let out the matter by passing a seton through a part of the parietes of the abscess. A puncture may be made with a small flat trocar, some of the matter be allowed to escape gradually from the cannula, and the stilette be then passed into the tube again, and pushed from within through another part of the sides of the abscess. An

oiled skein of silk is then to be carried through the cannula with an eye-probe, and the tube then taken away. The seton is to be covered with a pledget, and be changed as often as necessary, by attaching to one end of it another skein of silk, which is to be drawn through the punctures, by pulling the other skein out. The application of the seton is to be continued, till the discharge has ceased to be considerable.

4. A better and more successful method is, to puncture the swelling with an abscess lancet, let out as much of the matter as may be thought prudent, and then heal the wound by the first intention, by means of sticking-plaster. When the matter, after a week, or so, has collected again, another puncture may be made, and again healed. In this way, the cavity of the abscess will be kept undistended, and will gradually contract, till its entire obliteration is accomplished.

5. The absorption of the matter may sometimes be promoted by blisters or issues near the bottom of the spine, and by giving emetics. Indeed, when the vertebræ are suspected of being diseased, issues are invariably proper.

6. After the operation, the strength is to be supported with bark, aromatics, cordials, wine, porter, and a generous diet. Sleep is to be procured by opium, if necessary; and, as soon as circumstances will allow, the patient should

remove into a salubrious air, and, if possible, to the sea-coast.

7. Small chronic abscesses may be freely opened, without observing the foregoing cautions.

Some other abscesses will be described under the heads, *Empyema*, *Hypopium*, *Parotis*, *Whitlow*, *&c.*

ACHILLES, TENDON OF, RUPTURED.

SYMPTOMS.

At the moment of the accident, the patient hears a noise, like that of a nut breaking under his heel. A sudden incapacity or difficulty of walking immediately occurs. A depression and vacancy may be readily felt between the ends of the broken tendon. The distance between them is increased by bending, and lessened by extending the foot. The faculty of bending the foot is retained; but, that of drawing up the heel is much diminished, if not entirely taken away.

CAUSES.

These are all of one kind, namely, such violent efforts of the gastrocnemius and soleus muscles, as break the tendon. Hence, the accident mostly happens in dancing, jumping, &c.

TREATMENT.

The indication is, to put the separated ends of the tendon into contact, and to keep them so, till an union has taken place. With this view, the knee is to be moderately bent, and the foot completely extended. The ends of the tendon are then to be put as near to each other as possible. The hollows, in front of the tendon, on each side, are to be filled with compresses of soft lint, so as to hinder the bandage from pressing the ends of the ruptured part too far inward. A long narrow compress is then to be applied from the toes, along the sole of the foot, over the heel and calf of the leg, to above the ham. This compress is lastly to be bound on the limb with a roller, the application of which is to begin at the toes, be made round the ankle in the form of a figure of 8, and be continued up as high as the compress extends.

Various mechanical contrivances have been used for keeping the foot extended, and such must be had recourse to, if the patient gets up. The main part of each apparatus is a strap, with which the heel is buckled up as far as circumstances require.

For some time after the tendon has been united, it will be prudent to wear a high-heeled shoe.

AMPUTATION.

The cutting off of a limb, or other large portion of the human body, is frequently indispensably necessary. Many accidents and diseases, of an incurable nature, not only render parts of no use to the general welfare of the animal machine; but, what is worse, put them into a state, in which they so disturb its functions, as to threaten shortly to put an entire stop to life itself. Here there is only the alternative left of submitting to the pain of having the diseased or injured part cut off, for the preservation of the remainder, or of suffering the whole to fall a sacrifice. Experience teaches the surgeon, that the first determination is often proper; and fortitude should make the afflicted person submit, with resignation, to the sad dilemma.

Amputation of the Thigh.

1. No more of this part of the body should ever be removed, than is absolutely necessary; the danger of the operation, and the future weakness of the stump, being, in some measure proportioned to the height, at which the member is amputated.

2. The patient is to be laid upon a table, properly supported by pillows and assistants. The sound leg is to be fastened, by means of a

strong garter, to the nearest leg of the table, while an assistant is firmly to hold the diseased limb by grasping it near the knee.

3. The tourniquet is to be applied with its pad on the femoral artery, as high up as can be well contrived.

4. The surgeon, with the large-sized amputating knife in his hand, is to stand on the right of the patient.

5. By placing his arm under the limb, he is enabled to begin the first incision upon that portion of the upper surface of the member, which is nearest him, and to conduct the knife, with one quick stroke, all round the member, so as to complete the circular cut through the integuments.

6. This incision is to be made, while an assistant grasps the thigh above with both his hands, and draws upward the integuments.

7. The cellular substance, connecting the fascia and skin, is now to be divided to an extent sufficient to allow about two inches of the integuments to be separated from the muscles all round, drawn up and saved to cover the end of the stump.

8. The edge of the knife is now to be applied, under the margin of the supported integuments, upon the inner edge of the vastus internus muscle (supposing it to be the right thigh),

which, with the adjacent muscles, is to be cut obliquely through, upwards as to the limb, and down to the bone, so as to lay the latter part bare, about three inches higher than would be done by a perpendicular incision. The operator is next to draw the knife towards him; and, with its point resting upon the bone, and its edge kept in the same oblique position, the rest of the muscles are to be divided in that direction all round the limb, the point of the knife being in contact with, and revolving round, the bone, through the whole of the division.

9. The soft parts being divided, the bone remains to be sawn. The assistant is now to take a piece of linen, about fifteen inches long, and ten broad, which he is to slit from one end to its middle. This is called a *retractor*, and is intended to keep the flesh out of the way of the saw. The bone is received in the slit, and the ends, being pulled up by the assistant, hold the skin and muscles out of the way of the teeth of the other instrument.

10. The sawing is to be executed by long, bold, yet not hasty nor heavy sweeps; and the application of the instrument should commence, by placing the back end of it on the bone, when the operator is to make the first motion by drawing the saw towards him, from its heel nearly to its point. This makes a furrow, which

afterwards serves materially to steady the subsequent action of the instrument.

11. During the sawing, the assistant, who holds the limb, is to avoid raising the member too much, which would pinch the saw, and stop its action. Neither is he to depress the part too much, as this would break and splinter the bone, before its division is complete.

12. Should the latter event unluckily take place, the points and inequalities of the end of the bone are immediately to be cut off, with a pair of bone-nippers.

13. The stoppage of the bleeding is the next important object. The large open-mouthed femoral artery, being plainly visible, is to be drawn out with a pair of forceps, and firmly tied with a ligature. The other principal bleeding arteries are commonly taken up with the tenaculum, in order to be tied. As little flesh as possible should be included in the ligatures. When the end of the bone bleeds more than usual, a compress of lint, held upon it a few minutes, always stops the hemorrhage.

14. The bleeding vessels being secured, and one end of each ligature cut off, the skin and muscles are to be drawn over the end of the stump in such manner, that, when the lips of the wound are brought together, they may form one transverse line, out of which the

ligatures are to be brought in the most convenient places.

15. The parts are to be retained in this position with broad, long, strips of adhesive plaster, applied to the back of the stump, carried over its extremity, and laid down in front, the ligatures hanging out between them. Some lint, kept on with two or three additional strips, is to be put on, and, lastly, a pledget and a tow compress. A cross bandage is then to be laid upon the end of the stump, and retained there by a roller, the application of which is to begin round the waist, and be carried spirally downward to the extremity of the stump. Some now put over the whole a woollen night-cap, which, to say the best of it, is useless. The patient is to be put in bed, have the stump gently supported with a small pillow, and take about forty drops of the tinctura opii.

Amputation of the Leg.

1. As the preservation of the flexor tendons of the leg requires that the bones should be sawn through, about four inches below the lower part of the patella, the place of the incision through the skin is here subject to no variety, as it must always be made low enough to enable the operator to divide the bones,

without cutting the insertions of the above tendons.

2. The tourniquet is to be applied, with its pad upon the femoral artery, a little above where this vessel passes through the tendon of the triceps.

3. The patient having been placed as in the foregoing case, and the limb being held, the surgeon is to carry his arm under the member, and begin the incision through the integuments, at the upper and nearer part to himself. The cut is to be conducted all round the limb, by one quick stroke of the knife.

4. The next thing is to save skin enough to cover the front part of the end of the tibia. Here no muscle can answer this purpose; but, behind, it is unnecessary to detach the skin from the calf, as the belly of the gastrocnemius and soleus will afford, with the integuments attached to them, plenty of substance for covering the end of the stump.

5. The muscles of the calf, if possible, are to be divided with the knee bent. The muscles between the two bones and the interosseous ligament, are to be divided with a narrow double-edged knife, named a catling.

6. The retractor having been applied, and the bones sawn through, the bleeding arteries are to be taken u with the forceps and tenacu-

lum, and tied. One end of each ligature is to be cut off, and the stump dressed in a similar way to that adopted after the amputation of the thigh.

Amputation of the Arm.

1. No more of the arm is to be cut off, than the nature of the disease or injury requires.

2. The limb is to be held by an assistant in a horizontal position, while the operator stands on the outside of the member.

3. The situation of the tourniquet should be a very little below the margins of the axillæ.

4. While an assistant grasps the limb, and draws the integuments upwards, the surgeon is to make the circular incision through them. Little or no detachment of the skin from the muscles need be made. The triceps muscle should next be cut through, and allowed to retract; and the rest of the muscles are to be divided down to the bone, with the edge of the knife turned obliquely up, as it revolves round the limb.

5. The bone having been sawn, the brachial artery is to be raised with a pair of forceps, and tied. Any other vessels, needing a ligature, are to be taken up with a tenaculum. Lastly, the stump is to be dressed, &c.

6. When the amputation must be done very high up, no room remains for the tourniquet. In this example, pressure must be made upon the subclavian artery, from above the clavicle.

Amputation at the Shoulder-joint.

1. The flow of blood is to be commanded by pressing the subclavian artery against the first rib, from above the cavicle.

2. A semicircular incision is to be made with the convexity downward, about four inches below the acromion, across the outside of the shoulder. This incision should reach from the back to the front edge of the deltoid muscle. The skin need not be detached from this muscle, but both are to be reflected together, as high as the joint, for the purpose of forming a flap to cover the wound. The heads of the biceps, tendons of the muscles of the scapula, and the capsular ligament, are next to be cut, and the bone dislocated.

3. Should the articular arteries bleed profusely, they may now be tied.

4. One sweep of a small amputating knife will now complete the division, by cutting the soft parts towards the axilla below.

5. The axillary artery is to be immediately tied; any other vessel secured; the flap laid down; strips of plaster applied, &c.

Amputation of the Fore-arm.

1. As much of this part must be preserved as possible, the incision being made no higher than is absolutely necessary.

2. The tourniquet is to be applied a little above the elbow, with the pad upon the artery at the inner edge of the biceps muscle.

3. The circular incision through the skin is to be made with a small amputating knife, while an assistant draws the integuments upwards: a very moderate detachment of them from the fascia is requisite. The division of the muscles is to be done with the edge of the knife inclined upward; the parts between the radius and ulna are to be cut with a catling, or a double-edged scalpel; and the bones sawn through.

4. The radial, ulnar, and interosseous arteries, are those which usually require the ligature.

5. One half of each ligature having been cut off, the edges of the wound are to be so brought together, as to form a mere line across the face of the stump. They are to be kept in this position with strips of adhesive plaster, &c.

Amputation of the Fingers and Toes.

1. This is performed at the joints. If the skin will admit of being drawn up, a simple circular incision through the skin, just over the joint, will answer. In other cases, a semilunar flap must be made. The joint may be most easily cut into, when bent; after which, on one of the lateral ligaments being divided, the phalanx may be turned in any direction, and the division of the other parts becomes so easy as to need no description.

The toes are amputated in a similar way. When the sesamoid bones present themselves, it is as well to remove them.

Amputation of the Breast.

1. A difference should be made in the method of amputating a breast, according as the disease requiring the operation may be a mere sarcoma, or some malignant affection, like cancer, fungus hæmatodes, &c. In the first instance, little more than the tumor need be cut out; in the second, it is urgently necessary to extirpate, not only the parts visibly diseased, but also a considerable portion of the surrounding substance, lest the disorder recur.

2. The patient is usually seated on a firm

table, well supported with pillows and assistants; and with her arm confined backward, with a stick, so as to render the pectoral muscle tense.

3. An oval portion of the skin, including the areola and nipple, and proportioned to the size of the swelling, is to be first comprehended in two semicircular incisions.

4. The tumor is now to be detached from all its surrounding connexions, down to its base, when its entire separation is to be effected, by cutting it from the surface of the pectoral muscle, proceeding regularly from above downward.

5. When the tumor is of a malignant nature, a much freer removal of the skin must be made, and the swelling should be detached, not close to its circumference, but at the distance of an inch or two upon each side. All indurations and suspicious points, afterwards left, should be diligently cut away.

6. Any diseased glands in the axilla, also require removal. Sometimes, after detaching them on every side, it is most prudent to avoid a profuse hemorrhage, by applying a ligature round their base, before cutting them entirely off.

7. In the separation of diseased breasts, arteries which bleed profusely, should be tied

immediately they are cut, as well to hinder unnecessary loss of blood, as to enable the operator to see better what he is about.

8. The arteries having all been taken up, and tied, and the wound cleansed from clots of blood, the stick is to be taken from behind the patient, and her arm is to be allowed to be brought forward, so as to relax the integuments of the breast. The edges of the wound are now to be placed in exact contact, and strips of adhesive plaster, lint, and compresses, applied. A bandage, supported by a scapulary, is to be put round the chest, and the arm, on the same side, kept quietly in a sling.

Amputation of the Penis.

1. In mortifications of the penis, if the patient lives, the sloughs are always thrown off; after a certain time the parts heal, and the employment of the knife is unnecessary. Cancerous diseases of the penis are the cases demanding the performance of this operation, which is frequently followed by successful consequences, when the testes and glands in the groin are free from disease.

2. The operation is one of great simplicity, yet liable to be attended with more or less trouble, according as there is a necessity for removing a greater or smaller portion of the dis-

eased part. When the morbid affection is confined to the glans penis, and the incision can be made closely behind the corona glandis, the teguments and corpora cavernosa may be cut through with one sweep of the knife. Some advise a portion of skin to be saved, for covering the end of the stump; and, therefore, they direct a mere circular incision through the integuments to be first executed; after which, they are to be pushed up towards the pubes, before the corpora cavernosa are cut. Others object to this plan, as tedious and unnecessary, because the latter parts retract after the operation to so great a degree as to create a redundance of skin. Perhaps the best method is to be content with pushing the skin towards the pubes, at the time of cutting completely through the penis at once.

3. When the amputation is done close to the symphysis pubis, the corpora cavernosa are apt to retract excessively, and leave such a quantity of skin projecting, as to make it difficult to discover and secure the bleeding vessels. Here, it is better to take away a good deal of skin, by drawing it towards the glans, before cutting through the part.

4. When the arteries of the corpora cavernosa are not morbidly enlarged, and the amputation has been done near the glans, com-

pression will generally succeed in checking the bleeding. When they are enlarged, or the operation has been performed towards the pubes, some think the ligature the only safe means. B. Bell mentions a case, where a man bled to death, two hours after the operation, by trusting to compression. When the vessels cannot be taken up, however, pressure is the only resource.

5. A hollow bougie is to be introduced as soon as the operation is finished, for the purpose of keeping the orifice of the urethra pervious, and hindering the urine from running over the wound. When the operation is to be done near the os pubis, this instrument, or a catheter, ought always to be introduced, before the knife is used.

ANCHYLOSIS.

SYMPTOMS.

A RIGID inflexible state of a joint, which is naturally more or less moveable. An anchylosis is termed *true*, when the bones of the articulation have become inseparably connected by bony matter; *false*, when the moveableness of the joint is interrupted by adhesions within it, a contracted state of any of its muscles, &c.

CAUSES.

Fractures affecting the articular surfaces, or very near them; wounds, inflammations, and abscesses of joints; white swellings; a contraction of the muscles; long confinement of the limb in one position.

TREATMENT.

1. The true anchylosis is incurable, the bones having grown together, and become, as it were, one. The occurrence may sometimes be prevented by taking care to move the joint, before such connexion has been formed. When it cannot be averted, the surgeon must be careful to place the limb in that position which will be the most useful. Thus, the elbow should be bent. This circumstance, however, is not always in his power.

2. The *false* anchylosis may often be prevented by proper treatment of the complaint which is apt to bring it on, and by not suffering the joint to continue too long without any degree of motion. Thus, when the cure of a fractured olecranon, or patella, or indeed of any fracture near a joint, is somewhat advanced, the joint should be gently bent and extended a little every day.

3. The stiffness of joints, from long confinement in one position, may be removed, by

pumping cold water on the part, using camphorated liniments, and exercise. Time, however, must be allowed.

4. The anchylosis depending on adhesions, might, perhaps, sometimes be cured, by a prudent exertion of force for that purpose, and persevering in the plan of moving the part a little every day, for some time afterwards.

5. The anchylosis attending white swellings, is curable only with the latter affections; and when it has advanced to the state termed *true*, it must continue, though all other disease be removed.

ANEURISM.

UNTIL lately a *true* aneurism has generally been regarded as a tumor consisting of a morbid dilatation of some part of an artery itself. The *false* one alone was supposed to arise from a breach in the proper coats of the vessel. Although many of the old writers did not adopt this mode of thinking, such was the doctrine which commonly prevailed among modern practitioners, till Scarpa's late observations on the disease came forth. This distinguished surgeon and anatomist found, after many careful examinations of persons who had died of ex-

ternal and internal aneurisms, that there was, in reality, only one kind and form of the disease, namely, that proceeding from a solution of continuity, or rupture of the proper coats of the artery, and from an effusion of blood into the cellular substance. He maintains, that he has found out, in the most certain and unequivocal manner, that the solution of continuity is sometimes occasioned by a wound, a steatomatous earthy degeneration, an ulceration, or a rupture, of the internal and muscular coats of the artery. He contends, that the concurrence of a preternatural dilatation of these coats is not essential to the formation of the disease; that every aneurism, whether it be internal or external, circumscribed or diffused, is always formed by effusion; and that the internal and muscular coats have not the smallest share in the formation of the hernial sac.

This being the truth, the long-venerated division of aneurisms into *true*, *false*, and *mixed*, must be rejected as erroneous. The distinctions must now be into *external* and *internal*, *circumscribed* and *diffused*, *recent* and *inveterate*. The *venous aneurisms*, and the *aneurism from anastomosis*, are cases of a peculiar kind, as we shall soon explain.

SYMPTOMS.

Mistaken writers have enumerated the marks by which it was conceived possible to distinguish a *true* aneurism formed by *dilatation*, from a *false* aneurism arising from *effusion*. They say, that the *true* aneurism may be distinguished from the *false*, by being, at the commencement, small, circumscribed, indolent; without any change in the colour of the skin covering it; easily compressed, but, on removing the compression, immediately reappearing, as before. The same authors state, that it augments slowly, and that in proportion as it increases, the pulsation in it becomes weaker and more obscure, until it disappears entirely.

On the other hand, in the false aneurism, these appearances are said to be reversed; while the case is accompanied with a hissing noise, and, away from the centre, with a small trembling or oscillation, not felt in the true aneurism.

That the above symptoms are not characteristic of a true aneurism, is proved by what is seen in aneurisms from puncture. In these, if the wound has been very small, the same symptoms occur, which have been set down as peculiar to true aneurisms. Scarpa has explained, that whenever the laceration or ulceration of the internal coat of the artery, from an internal

slow morbid cause, is not extensive, so that the blood oozes slowly through the interstices of the fibres of the muscular coat, and when the cellular substance surrounding the artery is dense, and sufficient to resist the impetus of the arterial blood, the pulsating tumor remains small and circumscribed, compressible and elastic, with very little pain, and without any discolouration of the skin covering the swelling.

But, in proportion as the rupture or ulceration of the artery increases in size, and the surrounding cellular substance yields to the distention made by the blood, the tumor necessarily becomes larger, and loses that flexibility and elasticity, which it had at the beginning, while the numerous firm layers of blood, which form in it, at last render the pulsation also obscure.

The aneurismal sac, instead of being composed of the coats of the artery, are now acknowledged to consist of its cellular sheath, and of the adjacent aponeurotic expansions. When aneurisms are very large, they press upon the nerves, veins, and lymphatics around, so as to excite violent pain, torpor, and œdema of the limb. It is not every pulsating tumor that is an aneurism. A swelling situated over any large artery may throb with the vessel; a diseased absorbent gland may do so, as well as

abscesses having cysts approaching some great artery.

CAUSES.

While the doctrine of true aneurisms being morbid dilatations of the coats of the artery existed, it was supposed that the affected part of the vessel yielded, and became distended by the impetus of the blood into a sac. That a mere weakness of this sort, at any part of an artery, is not the cause of aneurism, has been well ascertained. Hunter and Home stripped off the outer coats of arteries; but no aneurismal swellings ensued.

We firmly believe, with Scarpa, that the proximate cause of aneurisms is always a wound, rupture, or ulceration, of the proper coats of the artery. The cause of this rupture, in spontaneous aneurisms, is some violent exertion, combined for the most part, with a congenital relaxation, or with a steatomatous ulcerated change of some portion of the proper coats of the artery, and more particularly of the inner coat. What Scarpa terms the *steatomatous, squamous, ulcerated disorganization* of the proper coats of the arteries, takes place sometimes in one point only of the artery, sometimes in several places, and at different distances from each other, in the whole course of the affected vessels.

TREATMENT.

1. No aneurism, in any situation, can be completely and radically cured, unless the ulcerated, lacerated, or wounded artery, from which the aneurism is derived, is by the assistance of nature, or of nature combined with art, obliterated, and converted into a perfectly solid ligamentous substance, for a certain space above and below the place of the ulceration, laceration, or wound.

2. The opening of the artery, in the aneurism from puncture at the bend of the arm, has been observed to become closed by a clot of blood, and even by something resembling a cicatrix, while the canal of the artery continued pervious. Yet, it is ascertained, that a closure effected in this way, is so weak and imperfect, that it cannot be regarded as a radical cure. The cicatrix is always ready to give way, upon the arm being violently stretched, or struck upon the place, where the artery was wounded.

3. Whether an aneurism be cured by nature, or by compression, the artery becomes obliterated, for some way above and below its communication with the aneurismal saç. Pressing the artery against a hard bone will sometimes make its inner surfaces inflame, and grow together. Both in the spontaneous and arti-

ficial cure, there are often two stages; in the first the entrance of the blood into the aneurismal sac is interrupted; in the second, the parietes of the artery are made to approach each other, and become firmly agglutinated together. Hence, in both methods of cure, the aneurism first loses its pulsation, and then diminishes and disappears.

4. The adhesive inflammation, and consequent obliteration of the tube of a large artery, have also been seen to follow a violent contusion of such vessel, especially if immediately, or a little after the accident, the course of the blood, within the contused artery, is artificially interrupted.

5. When aneurisms fall into a state of gangrene, the artery occasionally becomes impervious for some distance above and below its communicaton with the sac. This is accounted for by all the parts around the root of the aneurism, being affected with violent inflammation, which agglutinates and closes the artery. Or a dense, compact coagulum is formed within the vessel, and completely stops the course of the blood. Hence, when gangrene attacks deeply the root of an aneurism, the bursting of the sac never gives rise to a fatal hemorrhage. On the contrary, if the patient has strength enough, he recovers both of the aneurism and mortifica-

tion. When patients do lose their lives from the bleeding, after the mortification of an aneurism, it is because the sloughing has unfortunately been confined to a part of the skin and sac, and not extended to the root of the disease.

6. As the obliteration of an artery, affected with aneurism, is the effect of the process called adhesive inflammation, any compression, in order to be effectual, must be such as will make the artery inflame in this manner. The artery itself must also be susceptible of such inflammation; hence, all attempts to cure by compression promise no success, when an aneurism has had as a proximate caûse, a steatomatous change of the proper coats of the artery; when it has been preceded by a slow ulceration of these coats; or, when it has originated from excessive relaxation, or from earthy hardness, and brittleness of them. Here the portion of artery adjoining the aneurism is so diseased as not to admit of the proper adhesive inflammation. Not only compression fails, but, also, the ligature, when applied in such situation.

7. In diffused, hard, elevated, painful, aneurisms, compression is hurtful, because it occasions an increase of the swelling of the pressed part; because, while the tumor is compressed on one side, it expands on another; and because

the method often accelerates gangrene. All bandages are hurtful, which compress the aneurism, and circularly constrict at the same time the affected part; which make pressure only on a point below the breach in the artery; which do not press the artery effectually against the bone; or which are applied to spontaneous aneurisms arising from a diseased state of the coats of the artery. In cases, completely opposite to those just pointed out, bandages may produce a complete and radical cure.

8. The obliteration of the artery, for some way, above and below the breach in it, is the primary indication, whether the cure be attempted by compression, or by the ligature. Other means contribute to the effect only inasmuch as they tend to moderate the impetuosity of the blood towards the place, where the artery is compressed, or tied. Evacuations of blood, in young, robust, plethoric patients, low diet, diluent drinks, gentle laxatives and glysters, rest of body and mind, and cool air, on this principle, may be useful.

Popliteal Aneurism.

1. It has been observed to occur very frequently among postillions, and coachmen.

2. Compression is only to be tried, when the aneurism is very small, recent, and seemingly produced by some sudden laceration of the

artery; when the tumor is indolent, soft, and yields to the pressure of the hand; when it is situated exactly in the middle of the ham; and when it is not accompanied by swelling and numbness of the leg and foot.

3. Compression is contra-indicated, whenever the popliteal aneurism is spontaneous, or not depending upon a wound, or stretching of the artery; when it is of long standing, and prodigious size; when it is very hard; when it occasions acute pain and sympathetic fever, great swelling and coldness of the leg and foot; or when the aneurismal sac lies too high, or too low, in the ham.

4. The plan of putting compression in execution is to lay compresses over the aneurismal swelling, and another long one upon the track of the femoral artery, and then apply a roller to the limb from the toes to the groin. The bandage is to be frequently moistened with vinegar and water; its application is to be made tighter every time it is renewed; and, in proportion as the swelling diminishes, the number of compresses is to be increased, so that the narrowest may enter the hollow of the ham, and press on the artery above the opening in it, while the others operate on the vessel, without pressing too much on the hamstrings, and calf of the leg.

5. The operation for the popliteal aneurism consists in cutting down to the artery above the tumor, and in tying the vessel with a ligature, so as to hinder the blood from passing into the aneurismal sac, and oblige it to go into the lower part of the limb through the lateral anastomosing vessels.

6. The artery being often diseased for some way above the tumor, the chance of success is increased by applying the ligature at a certain distance from the swelling. In England, it has been common to tie the artery, a little before it passes through the tendon of the triceps; but Scarpa, with much reason, prefers doing this somewhat higher up, so as not to have the sartorius in the way.

7. An incision about three inches long, is to be made over the course of the artery; the fascia of the thigh, and the sheath of the artery itself, are to be slit open; and a double ligature put under the vessel, with an aneurism-needle. The artery should be disturbed, and separated from its attachments, as little as possible. The ligature should be firm and round, and not too thick, in order that it may cut through the muscular and internal coats of the artery, so as to give rise to the effusion of coagulating lymph, and the adhesive inflammation. The aneurism-needle is to be cut off, and one part of the ligature is to be applied above, the other below,

close to the places, where the detachment of the artery from the subjacent parts terminates. The ligatures should be drawn with firmness, to ensure the division of the inner coats of the artery, the portion of which betwixt the ligatures is to be now cut through.

8. One end of each ligature is to be cut off, and then the edges of the incision are to be brought into contact with adhesive plaster.

9. If the ligatures are on the artery, the tumor immediately ceases to pulsate, and its contents are afterwards gradually diminished by the action of the absorbents, till no appearance of swelling remains, and the patient regains the perfect use of the neighbouring joint, and, indeed, of the whole limb.

10. It is rendered probable, from Dr. Jones's experiments, that if one ligature were applied with due tightness to the artery, and were immediately cut and removed, the artery would afterwards inflame and become impervious, so that the cure of the aneurism might be effected equally well without any ligature remaining to act, in the wound, as an extraneous substance, and source of irritation, ulceration, and abscesses.

Inguinal Aneurism.

1. Before the recent improvements in modern surgery, no one supposed, that the exter-

nal iliac artery might be cut down to, and tied, so as to cure an aneurism reaching to the groin: no idea was entertained, that the anastomoses were yet adequate to the supply of the whole lower extremity. The contrary facts have now, however, been put out of all doubt, by several operations performed by Abernethy, Freer, and Tomlinson.

2. The necessary operation is exceedingly simple. An incision, about three inches in length, is to be made through the integuments. It is to begin a little above Poupart's ligament, extend upward in the direction of the artery, and be somewhat more than half an inch on the outside of the upper part of the abdominal ring, so as to keep out of the way of the epigastric artery. The aponeurosis of the external oblique muscle is next to be divided in the direction of the outer wound. The lower part of the internal oblique muscle is now exposed; and the finger being put under its lower edge and that of the transversalis, these parts are to be divided with a crooked bistoury. The finger may now be passed upwards, under the peritoneum, by the side of the psoas muscle, so as to touch the artery, about two inches above Poupart's ligament.

3. By means of an eye-probe, either a single or a double ligature is to be conveyed under

the artery, according as the operator prefers tying the vessel in one, or two places. Care must be taken not to include the vein.

Aneurism of the axillary Artery.

1. The subclavian, as well as the external iliac artery, may be tied, without the upper extremity being deprived of a proper supply of blood, as a case in St. Bartholomew's Hospital has recently established.

2. Axillary aneurisms may be cured by tying the subclavian artery; and the requisite incisions may be made either above, or below, the clavicle.

3. Below this bone, an incision might be made obliquely downward, some of the fibres of the pectoral muscle be divided, and a ligature put under the artery with an eye-probe. Did the aneurism not extend too far inward, the vessel might be got at by an incision just over the place, where the pectoral and deltoid muscles meet, and where there would be no need of cutting any muscular fibres at all.

4. The subclavian artery may also be tied by dividing the integuments just over the sternal end of the clavicle, pushing the sterno-cleido-mastoideus to one side, and passing a ligature under the pulsating vessel with an aneurism-needle. The last step is the chief dif-

ficulty, owing to the clavicle being pushed up, and the artery of course lying very deeply down. Ingenious needles have been devised for this purpose. They pass through a metallic sheath, and on the end being put down to the artery, the eye admits of being pushed out of the sheath for some way, so as to pass completely under the artery.

Brachial Aneurism.

1. This case being usually caused by a puncture, or wound, allows, in its recent state, a prudent trial of compression. The sooner this is done, after the injury, the better. Graduated compresses, with their conical end on the aperture of the artery, are to be applied, and bound on with a roller. Another long, narrow, compress may be also laid along the track of the brachial artery. The whole limb should be covered with the bandage.

2. When this plan cannot be tried, or proves unsuccessful, the operation should be performed. This consists in making an incision, about two inches and a half in length, through the skin and cellular sheath. It is to be made by the inner edge of the biceps, in the track of the vessel. The artery is to be separated from the vein and the median nerve, and have a ligature put under it, by means of an eye-probe.

Tying the vessel, above and below the sac, recent observations have proved to be superfluous.

Carotid Aneurism.

1. The possibility of curing this case, by tying the artery below the swelling, is well established, by cases, in which Mr. A. Cooper has operated. The probability of success had been evinced, by carotid aneurisms having disappeared, in consequence of a spontaneous obliteration of the adjoining part of the artery.

2. The carotid artery may be got at, and tied, by making an incision on that side of it, which is next the trachea, where no important parts are liable to be injured. The par vagum must be carefully left out of the ligature, which is to be put under the artery with an eye-probe.

Venous Aneurism.

1. This is a swelling and dilatation of one of the veins at the bend of the arm, excited by a preternatural communication having been formed between such vein and the subjacent brachial artery. The communication is made in the operation of bleeding, when the lancet passes too deeply, so as to transfix the vein, and puncture the artery. The outer wound of the vein heals, but the aperture, by which the

vein and artery communicate, is kept from healing by the constant gushing of the arterial blood through it into the other vessel. This of course becomes dilated at the place. The swelling, however, has never been seen larger than a pigeon's egg.

2. The tumor, after being emptied by pressure, fills again almost immediately, even when the veins below the part are strongly compressed. On the other hand, the swelling grows smaller, upon the brachial artery being pressed higher up. A tremulous motion is also observable in the swelling, no doubt, produced by the gushing of the blood from the artery into it.

3. The disease has been cured by compression; but, as the case does not attain any great size, nor produce any material inconvenience, the plan hardly merits a trial, especially as it might bring on unpleasant, instead of beneficial changes in the disease.

Aneurism from Anastomosis.

1. This is a tumor formed by a congeries of blood-vessels in the cellular substance. From being a mere speck, it may grow to a formidable size. It augments slowly, throbs, and sometimes bursts, and weakens the patient by loss of blood.

2. No good can be derived from opening the swelling, nor from making pressure upon it. The last method creates irritation, and does harm. The only wise plan is to cut every particle of the disease away. This should be done, immediately the disease shows itself, as it is its nature to become gradually larger, and more formidable.

BLADDER, PUNCTURE OF.

This operation becomes indispensable, when a retention of urine has induced urgent symptoms, and cannot be relieved by opium, the warm bath, bleeding; the introduction of the catheter, of a small bougie, &c. The bladder admits of being tapped from the perineum; from above the pubes; and from the rectum.

1. The puncture from the perineum is the most ancient operation. The trocar is to enter the bladder between its neck and the insertion of the ureter. The patient is to be put in the same position, as if he were going to be cut for the stone. An assistant is to make firm pressure on the abdomen above the pubes. The surgeon is to introduce the index finger of his left hand into the rectum, and press it backward towards the right side of the pelvis, so

as to make it as distant as possible from the parts about to be pierced. The trocar is to enter at the centre of a line, beginning a little above the anus, at the raphe of the perineum, and extending to the tuberosity of the ischium. At first the instrument is to pass in a direction corresponding with the axis of the body, and then its point is to be inclined somewhat more towards the patient's navel. After the urine has been discharged, the cannula is to have a stopper put in it, and be retained in the opening as long as the circumstances of the case require, the substance used for closing the mouth of the tube being taken out as often as an evacuation of the urine is needed.

2. It has been alleged, in recommendation of this operation, that it produces a more complete discharge of the urine, and is attended with less danger of an extravasation of urine in the cellular membrane, than the puncture above the os pubis.

3. The objections, which have thrown discredit upon this method, are principally founded on the danger there is of the trocar injuring the ureter, prostate, vesiculæ seminales, rectum, &c. in consequence of the patient's posture not being always exactly the same, nor the power of introducing the trocar, in one

precise direction with respect to the axis of the body, ever to be depended upon.

4. Endeavours have been made to obviate such objections, by dividing the skin with a knife, so as to be able to feel the distended bladder, before attempting to tap it. But, troublesome abscesses, between the bladder and wounded integuments, have made it doubtful, whether the latter innovation merits the name of an improvement.

5. A very strong reason against the method is, that the operation must, in most instances, be done close to the seat of those causes, on which the retention of urine depends. When the prostate gland is diseased, it is not proper. When the neck of the bladder is inflamed, it is not advisable. In the last sort of case, gangrenous and fatal consequences have been known to follow its performance. Another objection to it is, that it obliges the patient to keep his bed, the whole time of wearing the cannula.

6. On the whole, we may set down this operation as generally less eligible, than either of the two following. Were a retention of urine, however, complicated both with an enlargement of the prostate, and a thickened contracted bladder, perhaps, the puncture from the perineum might have advantages.

Puncture above the Os Pubis.

1. In this method, a trocar is pushed into the bladder from immediately above the symphysis pubis, and in a direction obliquely downward and backward; some practitioners choosing, upon fat patients, to make a previous division of the skin with a knife; others, with much reason, condemning this preparatory step as useless and objectionable.

2. It has been urged against this operation, that, when the urine is discharged, the bladder is apt to descend, and slip off the cannula, and that, consequently, the urine may escape from the puncture of the bladder into the cellular substance of the pelvis: that, should this separation of the bladder from the cannula not happen, still, if the tube were taken out, it could not be introduced through the same opening again: that the inability to withdraw the cannula, and clean it occasionally, is highly objectionable, as incrustations cannot be prevented from forming upon it: that when the cannula is withdrawn, after it is no longer needful, the urine may find its way into the cellular membrane.

3. To remove these objections, a long, moderately curved trocar has been recommended. A long straight one is apt to injure the poste-

rior part of the bladder, and even make an ulcerated opening into the rectum. The end of the curved one, on the contrary, produces no irritating pressure, as it inclines downward towards the neck of the bladder.

4. The dangers of the puncture above the pubes have been much exaggerated. Very soon after the operation, inflammation produces an adhesion of the punctured part of the bladder to the abdominal muscles, so as to hinder that organ from slipping away from the cannula. The adhesive inflammation, also, closes the surrounding interstices of the cellular membrane, and prevents extravasation. Experience has proved, likewise, that the cannula may be taken out, and put in again, without the least difficulty. (*Noel, in Desault's Journal de Chirurgie*, tom. ii. *Turner, London Med. Journ.* vol. ii.) The adhesions form very quickly. The cannula has been withdrawn as soon as the third day; and replaced without trouble.

5. Besides, the distention, which the bladder has suffered, has usually deprived it for a time of its power of contraction; therefore, the danger of its slipping away from the cannula is quite unfounded.

6. All necessity for leaving the wound without a cannula may be done away, by having a

double one, the inner part of which admits of being taken out to be cleaned.

7. The manner in which the bladder soon becomes adherent to the parts above the pubes, shows the inutility of having a very long cannula, the end of which may press upon the bladder, and do mischief.

8. As soon as the perviousness of the urethra is fully re-established, the cannula need no longer be worn.

9. Some have objected to this operation, that the situation of the opening does not allow the whole of the urine to escape. But, it is easy to put the patient in a position, in which the opening will be quite depending.

10. The chief circumstances in favour of the method are: it is easy and not painful; it is almost impossible to miss the bladder (supposing it not be morbidly contracted); no part of consequence is liable to be wounded; the trocar pierces the bladder, where, in these cases, it is least disposed to inflammation; the cannula can be easily fixed, and the patient conveniently wear it, either as he walks, stands, or lies down; the wound heals more readily, than in a lower place; lastly, this method is the only admissible one, when a swelling of the prostate, or an inflammation of the neck of the bladder, prevails.

Puncture from the Rectum.

1. The patient is to be put in the posture commonly chosen for lithotomy. An assistant is to make pressure on the belly above the pubes, so that the swelling of the distended bladder may become more prominent in the rectum. The surgeon is to introduce the index finger of his left hand into the intestine, and place the point of it as high as possible upon the middle of the tumor, occasioned there by the bladder. A curved trocar, having its point drawn a little back within the cannula, by the right hand, is to be conducted, on the same finger, into the rectum, and pushed into the prominent part of the swelling, which that finger touches.

2. This operation is highly commendable for its simplicity, and freedom from danger. Indeed, the distended bladder often projects so much in the rectum, as to obstruct the passage of the feces. The pain of this method is exceedingly slight. There is only one possible danger, viz. that of wounding one of the vesiculæ seminales. This too may be easily avoided, by introducing the finger and trocar, as far as possible, up the rectum, and by making the puncture high up, and exactly in the middle

of the swelling. Hence, the trocar should be made long.

3. The necessity of wearing the cannula, till the natural passage for the urine is re-established, is certainly attended with some inconvenience, as the instrument annoys the patient, whether he stands or sits down, and it is in the way when he goes to stool. In the last action, it is necessary to press upon the mouth of it, in order to retain it in its situation.

4. The evacuation of the feces, if they are at all indurated, may be facilitated by clysters.

5. The cannula cannot be taken out to be cleaned; but it has been left in thirty and forty days, without any ill effects. Experience has also shown, that it may be taken out, without replacing it, before the urine has resumed its natural course. In one instance, the cannula fell out by accident, forty-eight hours after the operation, and could not be put in again. (*Med. Commun.* vol. i.) The urine was voided, for six days, through the rectum, and then, on its passing through the urethra, the puncture healed, without leaving any fistulous opening. The cannula has also been withdrawn immediately after the operation. The urine was discharged through the rectum, on pressing the abdomen; but, not a drop came away at other times. On the pervious-

ness of the urethra being restored, the puncture in the rectum spontaneously healed.

6. When the rectum is scirrho-contracted, or obstructed with hemorrhoidal tumors, or when the prostate is diseased, this operation is improper. The puncture above the pubes is then to be preferred.

7. A solitary example of the puncture becoming fistulous, and not entirely healing, is recorded by M. Bonn; but, as merely a little urine found its way into the rectum, and no excrement got into the bladder, the inconvenience was not very great.

BRONCHOCELE.

SYMPTOMS.

This is a soft, elastic, equal swelling at the upper and front part of the neck; having a broad base, being unattended with pain, and at first readily yielding to the pressure of the fingers. But, in proportion as the tumor acquires an increase of size and age, it gradually changes its shape and consistence. An old bronchocele has every where a firm fleshy feel; though it is certainly more indurated at some points, than others. The tumor extends more

or less, towards each side of the neck. Sometimes, its base continues small, while the rest enlarges. In time, the swelling may attain an enormous magnitude.

The bronchocele has its seat in the thyroid gland. However, the adjacent cellular substance also in general, contributes to the tumor. The hardness not unfrequently affects the neighbouring glands; in which circumstance, the swelling often reaches from one side of the neck to the other, and insensibly loses itself in the surrounding parts, instead of being distinctly circumscribed, as is usually the case. Sometimes, only one lobe of the gland is enlarged. Sometimes, there is a mere induration of the cellular substance in the vicinity.

The true bronchocele is entirely a local disease, the patient being generally in other respects quite well. Nor, indeed, excepting the deformity, are any local complaints induced. However, patients, with large bronchoceles, frequently have an asthmatic respiration, and hoarseness. When the tumor meets with external resistance also, it is apt to press upon the subjacent parts, and induce difficulty of breathing and swallowing, and even apoplectic symptoms.

Bronchoceles are not at all of a malignant nature; nor are they prone to inflammation; though some few instances have been observed to suppurate and ulcerate.

In Switzerland, Savoy, the Tyrol, Carinthia, Styria, Derbyshire, and some other countries, the bronchocele is endemial. There it is most common among persons who live in vallies, which are exposed to a south or south-west wind, who have residences surrounded with forests, and near some river, or standing piece of water. It most commonly originates between the seventh and tenth year, and, more frequently, in children and women, than adults, or men. However, the disease has been known first to show itself both in the earliest childhood, and in very advanced old age.

CAUSES.

The endemial bronchocele has been ascribed to many different causes, the truth of which is to be received with doubt. Drinking snow-water is one of these; but that it should really have this effect is rendered highly improbable, since it is often drunk in certain parts of the world, without occasioning any such disease. Eating a large quantity of chesnuts has been another suspected cause. Yet, as the patients are, for the most part, healthy, it seems irrational to impute the local disease to bad aliment. Besides, who can suspect this cause in Derbyshire, where chesnuts are, by no means, more common, than in any other county of Eng-

land? The carrying of heavy things on the head has fallen into suspicion. Air has been observed in some bronchoceles, as well as passages, through which it had passed from the trachea into the thyroid gland. From some effort, in carrying a burden on the head, the windpipe has been suspected of having given way, so as to let the air pass into the gland, and make it swell. We cannot discern the least probability of this surmise being accurate. In the generality of enlarged thyroid glands, no air at all exists. Many tumors of this kind obviously contain a fluid, and have an œdematous feel. Why should not carrying a burden on the back, also, bring on the affection? Observation confirms too, that the disease most commonly commences in early youth, ere the patient has been at all in the habit of carrying loads upon his head. In many countries, it is customary to carry burdens upon the head; but the bronchocele does not prevail there.

An interruption to the passage of the secretion of the thyroid gland into the trachea has been suspected. We have no certainty, however, that it secretes any thing at all.

Particular bronchoceles have been found to contain air. These are said to be of three kinds. Sometimes the swelling consists merely of air in the thyroid gland and surrounding

cellular substance, and has a plainly emphysematous feel. If it be opened, the air escapes, and the tumor subsides. Here, we must suppose the air gets into the gland from the windpipe in some way, or another. This species of the disease is probably not of long duration, as the air must be absorbed.

By violent exertions, while the breath is held; by forcible coughing, &c.; a rent is said to be sometimes produced in the membrane between two of the cartilaginous hoops of the trachea, so as to let the air enter the cellular membrane around the thyroid gland. The same causes are stated likewise sometimes to push out a portion of the membranous lining of the trachea into a sort of pouch. The tumor is highly elastic, and disappears under pressure. Sometimes the bronchocele actually proceeds from a dilatation of the blood-vessels of the thyroid gland. Here, stoppage of the menses and pregnancies are alleged to be often concerned as causes.

Scrofula sometimes evidently prevails in patients, who have bronchoceles. Both disorders are also often benefited by similar medicines. Yet, scrofula may not be entitled to the rank of a cause; and certain it is, that many patients, with enlarged thyroid glands, have no vestiges of the other disease.

TREATMENT.

1. There is a wide difference between a recent, and an old bronchocele. The first may often be removed by proper treatment, while the second frequently cannot be cured in any way. However, the last case may sometimes be lessened, though not entirely dispersed. There have been few examples of bronchoceles being cured, after the patient has attained his thirtieth year.

2. It has been observed, that internal remedies for the bronchocele have the most efficacy, when they are retained, for some time, under the tongue, before being swallowed. Hence, we are advised to prescribe the medicines in a form, which will adapt them for being kept a certain time in that situation.

3. During the treatment, the patient should abstain from violent bodily exercise, all exertions of the organs of respiration, carrying heavy burdens, &c. Whatever plan of cure is adopted, the patient should at first, and occasionally afterwards, take a purgative dose. Should he chance to be in a place, where the disease is endemial, he ought, if possible, to change his residence.

4. The most celebrated remedy for the bronchocele is burnt sponge. It must be persisted

in to be useful. A scruple may be given with some treacle, or conserve, two or three times a day, in the form of a lozenge, which is to be allowed to dissolve gradually under the tongue. Burnt leather, and wool, are said to possess the same efficacy. A very good lozenge is stated to consist of burnt sponge, cork, and pumice-stone, ten grains of each. made up with syrup. Prosser used to direct the following powder to be taken in some syrup every morning and evening, for two or three weeks. ℞ Cinnab. gr. xx. Spong. Ust. Milliped. āā gr. xv. M. fiat pulv. The powders, after being taken two or three weeks, should be left off, for eight or ten days. During the second course of these medicines, the patient is to take every night, some aperient pills containing quicksilver, colocynth, and rhubarb. When these operate too violently, the colocynth is to be left out, and the dose lessened.

5. Two scruples of calcined eggshells, taken every morning and evening, in a glass of red wine, have been recommended. The following remedies are also in repute: one scruple of calcined eggshells with the same quantity of burnt sponge. Half a dram of the kali sulphuratum, dissolved in a bottle of water, to be taken every day. The extractum digitalis purpureæ, the muriate of barytes, sea-water, soda, extract

of hemlock, belladonna, saponaceous remedies, acetum scilliticum, &c.

6. External applications are also useful. The tumor may be rubbed with cold water; with dry towels; with aqua ammoniæ acetatæ; with the juice of the digitalis mixed up with some ointment; with camphorated liniments; with ointment containing tartar emetic.

7. When any particular cause seems to have a share in bringing on the disease, the treatment must be suited accordingly. When the bronchocele appears to depend on dilated vessels, cold washes and moderate pressure are indicated. When the menses are interrupted, they should be promoted. When the tumor contains air, cold washes, gentle pressure, and the avoidance of all exertion of the lungs, are proper. When the swelling is œdematous, diuretics may be serviceable.

8. Large old bronchoceles, though they cannot be entirely got rid of, may be considerably diminished, so that the difficulty of breathing, and swallowing, and the impediment to the return of blood from the head, will be obviated. Benefit of this sort has been derived from rubbing the swelling with strongly discutient liniments, putting on camphorated soap plasters, mercurial plasters, &c.; some of the above internal remedies being also exhibited.

9. Petit, Heister, and Schmucker, have seen large old bronchoceles spontaneously fall into a state of suppuration, and disappear, without any serious symptoms. These facts have led to the proposal of making the tumor suppurate by artificial means. A seton has been successfully drawn through the swelling. The plan of irritating the disease with the repeated application of caustic is apt to bring on a dangerous inflammation of the tumor and adjacent parts.

10. When a large bronchocele obviously contains fluid, this should be let out by a puncture, if the size of the tumor be such as to create urgent symptoms.

11. For the cure of very large bronchoceles, which are attended with great difficulty of breathing and swallowing, and apoplectic symptoms, and which resist every other plan, it certainly seems justifiable to endeavour to lessen the disease by tying one of the large inferior thyroideal arteries. A bronchocele has, indeed, been lessened in this way. It is true, an hemorrhage from the artery prevented a perfect recovery; but, little doubt can be entertained, that if this vessel were firmly tied with a smallish round ligature, an obliteration of its canal might be safely effected. Were we to perform the operatiou, we would not allow

the ligature to continue in the wound; but cut it, and take it away, immediately after it had been so firmly applied, as to cut through the inner coat of the artery.

12. Endeavours have been made to cut away enlarged thyroid glands; but the profuse hemorrhage has made surgeons abandon all attempts of this kind.

BURNS.

SYMPTOMS.

Some of these cases are slight; some very severe; others fatal. Hot fluids, not being capable of taking a temperature above a certain point, do not in general produce mischief, so deep as that arising from the application of heated solids, or actual flames, to the surface of the body. Hence, *scalds* are, for the most part, less severe, than burns. However, injuries produced by the flowing of ignited spirits, over parts, are frequently of a very deep and dangerous nature. The danger of the accidents, occasioned by the application of heat to the body, is in proportion to the extent of the burnt, or scalded surface, and the violence and depth, and particular situation of the injury. Parts may not be violently, or deeply injured,

and, yet, the burn, or scald, may have fatal consequences merely from its extent.

On the other hand, a burn may not be very large; but, it may be attended with considerable danger, by reason of the violence and depth of the mischief.

Burns upon the face, neck, and body, are, cæteris paribus, more dangerous, than upon the limbs.

The first effects of a burn are to cause pain and inflammation, the skin quickly becoming red and swollen. If the heat applied has been of a sufficient degree, the cuticle of the burnt part is soon detached by effusions of serum under it, and, what are called blisters, or vesicles, make their appearance. When the degree of heat is very great, or, when its application lasts a certain time, it kills the subjacent flesh, decomposes it, and converts it into a black eschar or slough.

The extent and depth of the eschar vary much in different cases, according to the violence and duration of the heat applied.

Sometimes, the sloughing is not directly produced by the fire; but, follows, as a consequence of the inflammation that is excited.

Burns, when large or deep, are apt to occasion a great deal of fever and constitutional disturbance. When they do not kill the patient in a little time, by the shock and irritation upon

the system, they may afterwards do so, by the weakness, which is the natural consequence of extensive sloughing, a copious discharge, and a long continuation of severe pain.

TREATMENT.

1. Some surgeons regulate the treatment of burns entirely upon antiphlogistic principles. When the burnt part of the skin is only inflamed, and not destroyed, ice-water, lime-water, and the lotio aq. litharg. acet. are recommended as applications. Spirituous lotions which produce cold on evaporating, are also extolled. At the same time, pain is diminished, and rest procured, by the free exhibition of opium. Laxative and febrifuge medicines are prescribed, and absolute quietude of the injured parts enjoined.

2. Certain advocates for the antiphlogistic plan, when the integuments are more seriously hurt, advise the saturnine cerate, the spermaceti ointment, or a liniment, made with equal parts of linseed, or olive oil, and lime-water.

3. Vinegar has been much praised, as an application to burns. In cold weather it is to be a little warmed. It is to be kept on the part, by any convenient means, till the pain abates. Afterwards, if there are any eschars, an emollient poultice is to be used. *(Cleghorn.)*

4. Some have placed great confidence in the efficacy of applying snow, powdered ice, and ice-water, to the injured parts.—*(Earle.)*

5. When the surface of the parts is at once converted into an eschar, or when sloughs afterwards occur, preceded by excessive inflammation, many use emollient poultices, which, as far as our judgment extends, are, by no means, ineligible applications.

6. Of late years, a stimulating method of treating burns has gained great repute, and a liniment, composed of the unguentum resinæ flavæ, thinned with oil of turpentine, so as to admit of being applied to the part upon thin linen, has been much employed, as a dressing. Before the liniment is used, the burnt surface is to be bathed with some warm, pure alcohol, or camphorated spirit. When this has been well done, the part is to be covered over with linen, that has been properly smeared with the liniment. The wax and oil of the ointment will fill up the pores of the cloth, and prevent evaporation, by which means, the strong stimulant powers of the turpentine, spirit of wine, and camphor, will be confined upon the burnt surface. The patient, at first, is to be dressed only once a day. If the accident, indeed, should happen early in the morning, he may sometimes be dressed again in the evening;

though, in general, it is most advantageous to let the first dressings continue twenty-four hours.

On the following day, when the patient is to be dressed, the surgeon should have fresh plasters ready before he takes off the others. A repetition of bathing the part with pure spirit of wine, &c. will seldom be necessary. A little proof-spirit, or laudanum, with the coldness taken off, will now be sufficient, and the plasters are afterwards to be immediately applied. These should be a little warmed, before being put on the part. The patient is now to remain quiet, twenty-four hours longer, at the end of which time, the inflammation will be found diminished, and a secretion of pus may be discerned, where vesicles were at first visible. Stimulants are at this period to be left off. Instead of the liniment with turpentine, the unguentum resinæ flavæ, reduced to a proper consistence with camphorated oil, is to be applied; and if, with this, any irritation take place, the ceratum lapidis calaminaris, or the saturnine ointment, may be used. Fungous granulations are to be repressed with powdered chalk. Indeed, as soon as secretion takes place, the use of this powder is to commence. It is to be freely sprinkled over the whole secreting surface, and then covered with the plaster. The excavations, made by the separation of eschars,

or the furrows around them, are to be filled with the same powder, and covered with the plaster. When the process is tedious, a poultice of bread and milk may be put over the plaster. Astringents and caustics are seldom needed throughout the cure. With such topical treatment, the free internal use of stimulants and opium is advised. However, when the sloughs have been thrown off, and suppuration is established, all stimulant food and medicines are to be avoided. Should the secretion of pus continue too great, gentle laxatives, and a spare diet, are recommended. When the eyes have been inflamed, and continue weak, topical bleeding, and small quantities of blood taken from the arm, are said to do good. When it is necessary to support the strength, small doses of bark, taken, two or three times a day, in some milk, will answer that purpose, without accelerating the circulation too much, as wine, ale, and spirits, are apt to do.—*(Kentish.)*

7. When the cuticle is raised into vesicles, it should not be cut off; but, only have a small puncture made in it, for the purpose of allowing the serum to escape.

THE TANJORE MAHARAJA SERFOJI'S SA[...] MAHAL.

CANCER.

SYMPTOMS.

Cancer presents itself in two forms, viz. in that of a tumor, or induration, and in that of a very malignant destructive ulcer. It is termed *occult*, while it appears as a mere hardness, or swelling; *open*, when it has assumed the ulcerated state.

When a malignant scirrhus, or a warty excrescence, has proceeded to a state of ulceration, attended with a constant sense of ardent, and, occasionally, shooting pains, is irregular in its figure, and presents an unequal surface; if it discharges a sordid, sanious, or fetid matter; if the edges of the sore be thick, indurated, and often exquisitely painful, sometimes inverted, at other times retorted, and exhibit a serrated appearance; and should the ulcer, in its progress, be frequently attended with hemorrhage; the case is generally regarded as a cancerous ulcer.—*(Pearson.)*

The term scirrhus has been vaguely applied to almost every sort of glandular induration, whether malignant, or not. The true scirrhus, by which is meant that, which is of a cancerous nature, before it falls into the ulcerated state, is hard and unequal on its surface, a little tender to the touch, not disposed to suppurate, and

at first increases in size very slowly. At last, putting on a more active disposition, the surrounding veins become varicose, and the hardness somewhat painful. The texture of the adjacent integuments, to which the scirrhus is often adherent, undergoes a manifest change, being sometimes discoloured, and puckered, or drawn up, particularly, in the female breast. Sometimes a kind of softness, or fluctuation, may be felt in a part of the tumor. Darting pains now usually afflict the patient. At length, the disease bursts into a malignant sore, with retroverted edges; either with the protrusion of fungus, or without it; and thus the distemper changes into an open cancer.

The skin, covering a scirrhus, usually breaks, before the swelling has attained a large size. It is the property of a scirrhous induration not to be at one time better, at another worse. The disease either remains stationary, or grows progressively worse. It is most inclined to attack the female breast, the lips, the glans penis, the uterus, testes, tongue, stomach, &c.; but, it is occasionally seen invading every structure, skin, muscles, cellular substance, &c.

It has been asserted, that the disease, which often affects some glandular parts, like the os tincæ, alæ of the nose, lips, &c. differs from the real cancer in not contaminating the neigh-

bouring parts, with which it is in contact, and in neither affecting the absorbent glands, nor the skin at a distance from it. It is a sore, which is uniformly progressive; whereas, after a cancerous ulcer has made some progress, a ridge is formed upon the margin, and the ulceration no longer takes that direction.—*(Home.)*

Certain surgeons contend, that a cancer is always an original disease, and never appears as the sequel of any morbid affection whatever.—*(Pearson.)* Others maintain, that cancer is not a disease, which immediately takes place in a healthy part; but one, for the production of which, it is necessary, that the part should have undergone some previous change, connected with disease. Thus it is preceded by pimples, tumors, warts, &c. which on being irritated put on a cancerous disposition.—*(Home.)*

It is alleged, with some appearance of truth, that a primary scirrhus seldom or never attacks an absorbent gland. It appears more frequently as an idiopathic affection in the glands, which form the several secretions; and, of the secreting organs, those that separate the fluids, which are to be employed in the animal economy, oftener suffer, than the glands, which secern the excrementitious parts of the blood.—*(Pearson.)* When the structure of a scirrhus is removed and examined, its appearances are

somewhat different, according to the progress which it has made. In its early stage, the centre is semicartilaginous, and more dense than the circumference; the whole being intersected by irregular bands of a ligamentous texture, blended with a softer substance. As the distemper advances, this central point is less observable, although the intersecting bands still exist, and an irregular cavity is formed within the tumor, filled with a bloody fluid. Sometimes, the mass is composed of several distinct portions, enveloped by the ligamentous bands, disposed in concentric circles. Sometimes, in different parts of the tumor, there are cysts of various magnitudes, which have been taken for living hydatids.—(*Adams.*)

CAUSES.

Some have set down cancer, as a constitutional, others, as entirely a local disease. In the latter sentiment, we decidedly join. Neither the recurrence of cancer in the same part, nor its breaking out in another, after being once extirpated, can be regarded as a proof of the disease being a general one of the habit. Until latter times, the manner in which the white bands of cancerous tumors extend to a distance around, had been unobserved, and, of course, a sufficient quantity of the substance,

surrounding the induration, was seldom taken away. Cancer has generally, till very lately, been confounded with the fungus hæmatodes, which always recurs, unless the incisions be made at a considerable distance from the obvious distemper. When Dr. A. Monro only found four cases out of sixty, where he had cut away the disease, remain well two years, we must suspect that some particles of the disorder must have been left behind.

The appearance of a cancer elsewhere proves nothing to the point, as no reason prevails, why the previous existence of a local disease in one situation, should render its origin in another impossible. It may be observed, also, that the occurrence is not usual. When a relapse happens, it is generally in the same part, and, as we suspect, from some particles of the distemper being frequently left behind, and, perhaps, in some cases, from the continued operation of those inscrutable causes, which first gave rise to the disease.

We have relations of surprising success attending the extirpation of cancers. Mr. Nooth cut away one hundred and two, and all the cases got well. Mr. Hill performed eighty-eight operations, with hardly any failures. We are willing, however, to admit, that many of the instances in question might

not be really scirrhous, cancerous, or malignant diseases. Yet, we feel warranted in concluding, that some of them were cancerous disorders; and, as they did not recur, they probably could not depend upon an affection of the whole habit. Why Nooth and Hill had more success than Monro, might have proceeded partly from their difference of operating, and partly from their reckoning many swellings and ulcers to be cancerous, which were not really so.

One gentleman considers cancers as depending upon animals of the hydatid kind in the part affected.—*(Adams.)* But, the existence of cysts in the tumor is not invariable. Were they actually hydatids, the disease could not be rationally explained by the doctrine. How could the white ligamentous intersections, and the rest of the morbid texture, be accounted for? Why should not cancerous disease always accompany the presence of hydatids? Why does not amendment follow the use of means, which must be deemed powerful enough to destroy such of these animals, as may exist upon the surface of a cancerous ulcer?

Another late writer advances the hypothetical notion, that cancer enjoys an independ-

ent animal existence in the body, on which it is supposed to prey.—(*Carmichael.*)

The proximate cause of cancer is at this day quite unknown. It is ascertained, that many other diseases, when irritated, may change into carcinoma, as warts, pimples, ganglions, &c. It is found, that cancer mostly afflicts persons advanced in life, and women, about the period when the menses cease. The distemper is thought to be frequent in unmarried females, about this time of life; and, hence, celibacy is suspected to have some share in predisposing persons to the complaint. A sedentary life, long mental trouble, grief, discontent, &c. are also supposed to predispose to cancer. The distemper is thought to affect women particularly often, who have had no children; or, if they have had them, have not suckled them.

Some have talked of a cancerous *poison*; its existence has not yet been proved.

TREATMENT.

1. This presents three general considerations; viz. internal remedies, external applications, and extirpation.

2. Cancer having baffled the virtues of every medicine, it would be tedious even to enumerate all the remedies which have been tried.

Hemlock has, perhaps, acquired as much repute as any, though its efficacy is by some doubted, and by others altogether denied. About three grains of the extract, thrice a day, is a proper dose to begin with; but, the quantity may be gradually increased, as the stomach becomes used to it. Some degree of nausea and headach are a criterion of the dose being sufficiently powerful. Belladonna, foxglove, henbane, and, indeed, the whole class of narcotics, have been occasionally exhibited.

3. Arsenic has been much praised as an internal medicine in cancerous cases. It was given by Mr. Justamond, who used to order two grains to be dissolved in a pint of water, with some syrup of chicory, and half an ounce of rhubarb. One table-spoonful of this mixture was given, every night and morning, with half a dram of the syrup of poppies. When arsenic is to be exhibited internally, we recommend the kali arsenicatum, the strength of which is determinate, and the dose easily regulated. Two grains are to be dissolved in four ounces of mint-water, and one ounce of proof-spirit. The dose is two drams, three times a day.

4. Cancers, in various parts of the body, have apparently been cured by the internal use of iron. Mr. Carmichael has prescribed the

tartrate of iron and potass, and the carbonate, phosphate, oxyphosphate, and suboxyphosphate of the metal. Some constitutions can bear these preparations only in small quantities; they affect most patients with constipation, and many with headach and dyspnea. These circumstances, therefore, must be attended to in regulating the dose. The above gentleman has seldom given less than thirty grains, in divided doses, in a day, or exceeded sixty. He prefers the suboxyphosphate for internal use, and states, that it answers best in small doses, frequently repeated. It should be blended with white of egg, have a little pure fixed alkali added, and then be made into pills with powdered liquorice. Aloes is recommended for the removal of costiveness. When half a grain is combined with a pill, containing four grains of carbonate of iron, and taken thrice a day, the constipation will be obviated. When the internal use of iron brings on headach, difficult respiration, a quick, sometimes full pulse, which is also generally hard and wiry, excessive languor, lassitude, &c. and such symptoms become alarming, the iron is to be left off, and four grains of camphor given, every fifth hour.

5. Cancerous diseases being highly painful, opium is serviceable in lessening the patient's

sufferings, and procuring rest; but it has no specific effect on the distemper.

6. With regard to other medicines, we can only state, that mercury has been found rather hurtful, than useful; and that bark, guaiacum, sarsaparilla, cuprum vitriolatum, and many other remedies, have proved ineffectual.

7. Benefit is said to have been derived from restricting the patient to a diet just sufficient for the support of life, as barley-water, or tea alone. A strict milk diet has done good.—*(Pearson.)*

8. The external applications to scirrhi and cancerous ulcers have been innumerable. The best of them, however, have done little more than lessen the pain and fetor, while the worst have exasperated the disease. Certainly, as a scirrhus, by being irritated, is likely to be changed into an open cancer, great caution should be used in making applications to it. Perhaps, it is generally best to be content with defending the tumor from cold, and accidental harm, by covering it with a piece of fleecy hosiery, or soft swan's down. Some recommend the repeated application of leeches to the swelling, or, when the disease is inward, general bleedings, to be continued for a length of time, with a milk and vegetable diet.—*(Fearon.)* Others have used externally in ul-

cerated cancers, the carbonate, phosphate, oxy-phosphate, and arseniate of iron blended with water, to the consistence of a thin paste, which should be applied once every twenty-four hours. To occult cancers has been applied a solution of the sulphate of iron, ℥j to ℔j of water. The acetite of iron, diluted with eight or ten times its weight of water, has also been used. Such lotions are applied by means of folded linen, over which a piece of oiled silk should be put, to prevent injury of the clothes.—*(Carmichael.)* To scirrhi hemlock, and mercurial plasters, have been applied; but with little benefit. Camphorated mercurial frictions have also been ventured upon, as we believe with unjustifiable temerity, and decided ill success. Cancerous ulcers have had applied to them hemlock, and carrot poultices, carbonic acid gas, oil, lotions of opium, &c. Of these, the carrot poultice is, perhaps, deserving of most praise.

9. As we have no medicine, nor outward application, on which much hope can be placed for the cure of cancer, either in the occult, or open state, and as the disease generally extends itself, till it induces fatal complaints, it follows, that we should not devote too much time to the trial of such means, but, advise the extirpation of the disease, while the thing is completely practicable. Though Mr. Pearson

thinks, the chance of a permanent cure is not diminished by the long duration of the complaint, the contrary sentiment prevails among the best-informed surgeons; and it is undeniable, that we often meet with cancers, which cannot be extirpated merely in consequence of the extent of the mischief.

10. There are two modes, by which a cancer may be extirpated; viz. by cutting out all the diseased parts; and by destroying them, and making them slough, by powerful applications.

11. The advantages, attending the operation by the knife, are such as to give it a decided preference in all cancerous diseases. In the advanced state of the disease, it is the only mode, which is capable of removing the contaminated parts to a great extent; and, in doing it, the surgeon is enabled to take away with precision every part suspected of being diseased. When the operation is over, he can examine the part, that has been removed, and see, whether it is every where surrounded by healthy parts; and, if it is not, by referring to its natural situation, he can remove any other portion, which may create suspicion. The skin, after the operation, always admits of being brought more or less over the surface of the wound, and sometimes the edges of the cut may be placed in even contact. The operation

is done in a few minutes, and the wound generally heals, in two, or three weeks.

12. Caustics form the other means of extirpating cancers. The fears of hemorrhage and pain led to this objectionable practice. Caustics are hardly ever capable of effecting an entire destruction of the disease, in consequence of the contamination extending beyond the diseased alteration of structure. They are also infinitely dangerous, because every thing, which irritates the diseased part, increases its action, and its power of contamination. Arsenic, corrosive sublimate, and the actual cautery, have been used for the extirpation of cancers. Home and Cline have employed equal parts of the white arsenic and sulphur. Justamond sometimes used two parts of the powder of antimony with one of yellow arsenic; sometimes yellow arsenic mixed with armenian bole and red precipitate; in other instances a sulphuret of antimony. Occasionally opium was added, from a supposition, that it rendered the application less painful.

CARBUNCLE.

SYMPTOMS.

When a carbuncle is about to make its appearance, the first complaint, which the patient

generally makes, is of great heat and pain in some part of the body. To the eye only a very trivial prominence is perceptible, with an extensive base; but, upon examination with the fingers, a circumscribed, deep, very hard tumor may be felt. The centre of the swelling soon becomes of a deep red colour, while the circumference is considerably paler. Upon the apex, is seen a sort of vesicle, which itches so violently, as to compel the patient to scratch it. By this means, it is broken, when, instead of pus, an ichorous brownish matter is discharged, the parts underneath having a black appearance. Sometimes, several small openings are thus produced, the parts within each of which has the same dark colour. When the disease comes on with symptoms of a malignant typhus fever, a sense of considerable weight and rigidity is experienced around the seat of the swelling. The restlessness is very great; the countenance pale; the tongue sometimes white, occasionally of a dark red colour, but moist; the pulse small and feeble; the urine in some cases pale and copious, in others very turbid. The patient frequently complains of head-ach, or vertigo, and continual wakefulness: often he is delirious. Alternate shiverings and sweats come over him. In some instances, costiveness, in others a profuse diarrhœa, pre-

vails. The appetite is lost; all nourishment is rejected by the stomach; there is a difficulty of breathing; and the prostration is such as sometimes to induce syncope. In some instances a miliary eruption happens; in others, petechiæ occur in different parts of the body. In certain cases, towards the end of the disorder, an eruption of suppurating little tumors appears; but these do not become true carbuncles.

It is the nature of carbuncles to fall into a state of gangrenous suppuration. Their contents consist of a thin and brown-coloured fluid, blended with a large quantity of sloughy cellular substance. They are tardy in bursting; the opening which forms is insufficient for the discharge of all the matter and sloughs; and, the longer these are confined, the more they increase, and the more extensive the mischief becomes.

The carbuncle, or anthrax, is sometimes single, and of prodigious size. However, like boils, it occasionlly appears in several parts of the body, at once. When a symptom of the plague, it is generally accompanied with the pestilential bubo.

CAUSES.

Malignant typhoid, and pestilential fevers, seem to induce a state of the constitution, in

which carbuncles are apt to form. But the disease also comes on, without being preceded by such disorders of the system. However, we have never seen a carbuncle occur in what could be called a good habit. The patients have always had impaired constitutions. The disease is reputed to be more common among the rich, voluptuous, and intemperate, than the poor classes of society, and such as refrain from excesses in their mode of living.

TREATMENT.

1. The local treatment consists in applying emollient poultices and fomentations, and in making a free incision into the tumor, so as to allow the matter and sloughs to escape. The latter proceeding is of infinite importance, and should be adopted, as soon as the nature of the disease is known. It at once relieves the pain, and checks the expansion of the mischief. After the operation, the contents of the tumor should be pressed out, as far as this can be effected without too much irritation. The poultice is then to be continued, till the sore puts on a healthy appearance, when common dressings are indicated.

2. The origin of carbuncles being connected with a depraved habit; a chief indication is to endeavour to improve the general state of the

constitution. Bleeding, purging, and other antiphlogistic means, are seldom allowable. On the contrary, the strength is to be supported with tonics, wine, cordials, nourishing diet, plenty of good air, anti-putrescent vegetables, &c. The disease, also, being attended with severe pain, requires the exhibition of opium.

CASTRATION.

1. When a testicle is incurably diseased, and the distemper produces such continual pain, irritation, and inconvenience, that the health materially suffers, and the patient's necessary pursuits are seriously interrupted, castration is proper. Sarcocele, fungus hæmatodes, and scirrhus of the testicle, are the principal complaints rendering such operation necessary. Nor should it ever be delayed, till the spermatic cord and inguinal glands become affected, as a perfect recovery is then often impossible.

2. The patient is to be laid upon a table, with suitable pillows under him, and his hands and thighs held by assistants. The surgeon, with a scalpel, is to begin the incision through the integuments, a little above the place, where he purposes to divide the spermatic cord, and

he is to extend the cut, downward, nearly to the bottom of the scrotum. The part of the cord, which is presently to be cut through, is now to be dissected from its surrounding connexions, so that the operator can put his finger beneath it. Most surgeons now separate the vas deferens, and tie the rest of the spermatic vessels with a ligature, just below which they then cut through the whole cord, and afterwards proceed to detach the testicle. Others, after raising the cord, at once divide it, and endeavour to take up the arteries, and tie them as separately as possible. The removal of the testicle is now easily accomplished, as nothing remains to be done, but just to cut the loose cellular substance, which connects it with the scrotum. Any of the latter part, in a diseased state, is to be cut away. When vessels within it also bleed profusely, they are to be secured with a ligature.

CATARACT.

SYMPTOMS.

A CATARACT is attended with an opacity close behind the pupil, and a diminution, or total loss of sight. The seat of such opacity, with a very

few exceptions, is either in the crystalline lens, or its capsule. For the most part, it originates slowly, and increases in a very gradual manner. Sometimes, it comes on quite suddenly, and this in a very great degree. The first effect of a beginning opacity is to occasion a mist before the eyes, which surrounds objects, grows more and more dense, and, at length, entirely hides every thing. In proportion as the mist before the eyes increases, the opacity behind the pupil becomes more considerable. In consequence of the lens being thick at its middle, and thin at its edges, the opacity may be first perceived at its centre, and there it is also greatest. The thin margin, which is not quite so destitute of transparency, looks externally like a black circle, behind the edge of the pupil, surrounding the paler nucleus of the lens. Even when the lens is entirely opaque, a few rays of light still find their way through its thin edge, and, hence, in cases of the most complete cataracts, patients are always capable of distinguishing light from darkness. Hence, also, the reason, why patients, who have a beginning cataract, have the most difficulty in seeing things straight before them, and the least in discerning what happens to be situated sideways. As the pupil expands in dark places, and the iris then covers less of the thin margin of the lens, a

larger quantity of the rays of light can penetrate to the retina. Hence, patients with cataracts generally see better in a moderate, than a vivid light. They also are for a time somewhat assisted by convex spectacles, which, by magnifying the objects, surrounded with the appearance of mist, render them more distinct and visible. A cataract has generally no effect upon the iris, so that the pupil expands, and contracts, in its usual way.

Surgeons should be careful to discriminate a cataract from certain states of the gutta serena where the pupil puts on a white cloudy appearance. On attentive examination, such alteration will be found to be situated too far behind the iris to depend upon a cataract. Practitioners must also be upon their guard, not to mistake a certain stage of the fungus hæmatodes of the eye for an opacity of the crystalline lens.

Cataracts are of various kinds, and receive different appellations. When the opacity is confined to the lens alone, it is called a *crystalline cataract.* When the capsule of the lens is alone opaque, it is a *membranous cataract.* When the opacity only affects the front layer of the capsule, the case is named the *anterior membranous cataract.* When only the back layer is opaque, it is the *posterior membranous cataract.* When the capsule and lens are both

opaque, it is a *mixed cataract.* Sometimes, the fluid in the capsule loses its transparency, forming a *cataract of the liquor Morgagni.* When the opacity is neither in the lens nor the capsule, the case has been termed a *spurious cataract.*

When the lens does not become materially softened as it grows opaque, it is a *firm cataract.* When the lens is softened into a pulpy, or cheese-like substance, it is a *soft* or *caseous cataract.* When nothing remains in the capsule, but a limpid, or milky fluid, the substance of the lens having been absorbed, the case is called a *fluid,* or *milky cataract.*

When after an operation, done for the removal of the opaque lens, the capsule becomes affected with opacity, the case is termed a *secondary membranous cataract.*

CAUSES.

Cataracts are sometimes the consequence of blows, concussions, and other kinds of external violence. In violent inflammatory fevers, the lens occasionally loses its transparency.—*(Richter.)* All ages, constitutions, and classes are liable to the cataract. However, the disease is more common among old, than young subjects. Persons, who strain their eyesight a great deal, and who work before strong fires,

or in a very vivid light, are particularly liable to cataracts. When a cataract occurs in one eye, the other seldom remains long unaffected. The disease has been suspected of being sometimes hereditary, in consequence of its being noticed to affect all the branches of particular families at a certain time of life Cataracts sometimes follow punctures of the eye. The secondary membranous cataract is the consequence either of the operation of extraction, or couching. Lastly, cataracts are sometimes congenital.

TREATMENT.

1. Cataracts can seldom be cured without an operation. Medicines obviously cannot avail in numerous instances, as, besides the opacity, the natural texture of the lens is totally annihilated. Cataracts, which have originated suddenly, from manifest external causes, are those, which are the most likely to get well without an operation. Such cases often disappear spontaneously. Mercurial frictions are reported to have dispersed cataracts. The exhibition of antimonial wine, the aconitum, and the bark of spurge-laurel, is said to have succeeded. Cicuta, the extractum hyoscyami albi, the aqua lauro-cerasi, calomel, issues, and electricity, are means alleged to have been attended with

efficacy. An accidental blow on the eye has been known to dissipate a cataract. A drop, or two, of æther applied to the eye, once or twice a day, and frictions over the eye with a weak volatile, or mercurial liniment, have succeeded.—*(Ware.)*

2. There are two different operations practised for the cure of cataracts. The most ancient is called *couching*, or the *depression of the cataract.* That of later invention, is termed *extraction.* However, neither can prove of any service, in case the retina is insensible. Hence, the satisfaction of observing, that the motion of the iris is free and perfect, and that the patient can disinguish the difference between light and darkness.

3. In couching, or depression, the opaque lens is pushed, with a needle, out of the axis of sight, down into the vitreous humor, where it is ultimately absorbed. In extraction, the opaque body is taken entirely out of the eye, through an incision, made in the lower part of the transparent cornea.

4. Mr. Hey uses a round needle, made flat towards the point by grinding two opposite sides, and having a sharp elliptical extremity. Scarpa employs a slender needle, with a slightly curved end, a very sharp point, a flat convexity, and two cutting edges. Some surgeons wrongly prefer straight spear-pointed couching-needles.

5. The patient is to be seated upon a chair, somewhat lower than that of the surgeon, before a window, where the light is not strong. An assistant is to support the patient's head, placing one hand under the chin, the other upon the forehead. With the latter hand he also raises and keeps up the upper eyelid. The other eye should be covered and gently compressed with a handkerchief. The patient is now to be directed to turn the eye, which is to be operated upon, towards the nose. The couching-needle, if a straight one, is then to be pushed through the sclerotic coat towards the centre of the vitreous humor, the operator resting his hand upon the patient's cheek. So much of the instrument is to be introduced, that its point, when brought forwards, will reach the centre of the crystalline. The place, where the needle ought to enter, is about one sixteenth part of an inch behind the junction of the cornea with the sclerotica. If the cataract be firm, it is now to be depressed downward and backward into the vitreous humor, by carefully pressing upon the lens with the flat surface of the needle. When the cataract is too soft to be depressed in a mass, the needle is to be repeatedly moved downward and backward, so as to break the caseous matter of the lens to pieces, and push some of it out of the axis of

vision. The absorbents will in time take away the fragments of the broken lens; and, should they not do so, in a moderate time, couching may be safely repeated. When the cataract is fluid, or milky, the chief object of the surgeon is to lacerate and break the capsule, as much as he can do with safety. When the cataract is of the secondary, membranous kind, the principal thing in view, is to break the opaque membrane, and push the fragments from the pupil. Scarpa, with his curved needle, uses its flat convex surface for depressing firm cataracts; and its sharp edges for cutting caseous cataracts into pieces. The point he sometimes turns forward, towards the pupil, for the purpose of forcing through it the opaque fragments, which are said to be more quickly absorbed in the anterior chamber of the aqueous humor. He also turns the point forward to pierce and tear membranous cataracts. In introducing the curved needle, the point is to be turned backward towards the centre of the vitreous humor. Whatever needle is used, or plan pursued, the principal cautions requisite in couching are, not to injure the ciliary processes and iris, and not to attempt too much at a time. The operation always admits of being repeated with safety. For a few days after couching, the eye must be covered with a compress, wet

with the saturnine lotion, and be guarded from the light. The bowels are to be kept open, and a low diet prescribed.

6. In the operation of extraction, the patient is to be seated in the same way as for couching. The knife, used by Baron Wenzel for making the incision through the cornea, has a blade much like that of a common bleeding lancet; but, it is somewhat longer, and not quite so broad. The lower edge is all sharp, while the upper one is so only, to a little distance from the point. Ware's knife principally differs from Wenzel's in being less spear-pointed. Every knife for this operation should increase in thickness, from the point to the handle, so as completely to fill up the wound, as it enters, and prevent the premature escape of the aqueous humor. Were this fluid to be discharged, before the division of the cornea was perfected, the iris would fall forward in the way of the edge of the knife. The eye is to be fixed, by the operator placing the index and middle finger of his left hand, upon the tunica conjunctiva, just below, and a little on the inside of the cornea, and by the assistant, who supports the head, applying one or two of his fingers upon the conjunctiva, a little on the inside and above the cornea. The point of the knife is to enter the outside of the cornea,

a little above its transverse diameter, and just before its connexion with the sclerotica. It is to be pushed on slowly and steadily, without any stoppage, in a straight direction, with its blade parallel to the iris, so as to pierce the cornea, towards the inner angle of the eye, on the side, opposite to that, which it first entered. Supposing Ware's knife to be used, the blade is to be pushed onward, till about one third of it has emerged from the cornea. When the knife has reached thus far, its edge is below the pupil, so that the margin of the iris is no longer in danger of being wounded, and the instrument itself keeps the eye steady.

The fingers are now not to make any more pressure upon the eyeball; but, are only to be used in separating the eyelids. The incision of the cornea is then to be completed by pressing the knife slowly downward, till it has cut its way out, a little before the semicircular junction of this membrane with the sclerotica. When the iris comes too forward, in the performance of this incision, it will recede if the operator rub the cornea downward with his finger. Care must be taken not to incline the edge of the knife too much forward, lest the opening in the cornea be too small for the easy extraction of the cataract. Nor must the edge be directed too much back-

ward, lest the iris be injured. The capsule of the lens is now to be divided with the point of a small needle, made of flexible gold, and having at one of its ends a curette, or small scoop. Gentle pressure on the eye will now make the lens come forward through the pupil, into the anterior chamber, from which it will either fall upon the cheek, or may be easily extracted. When the cataract breaks, the fragments should be removed with the curette. When the case is a membranous cataract, the opaque capsule is to be taken away with a very small pair of forceps. A dossil of lint, wet with cold water, is to be placed over the eye, and be covered with a pledget of the spermaceti, or saturnine cerate. A compress of fine linen is then to be put across over both eyes, and be pinned to the patient's night-cap.

CHILBLAINS.

SYMPTOMS.

CHILBLAINS are generally inflammations, or sores, affecting the hands, feet, nose, ears, or lips, and arising from the effect of cold. A chilblain, in its mildest form, is a swelling, attended with a moderate redness of the skin, and a sensation of heat and itching. After some time, it

usually disappears of itself. In a more severe degree, the swelling is larger, redder, and sometimes of a dark blue colour; while the heat, itching, and pain are so violent, that the patient cannot use the part. In the third degree, small vesicles arise, burst, and produce an excoriation, which quickly changes into an ill-conditioned ulcer. The sore discharges a thin acrid fluid, is in general very obstinate, and sometimes penetrates so deeply as to render the subjacent bone carious. In the worst degree, the inflammation excited induces gangrenous mischief, vesicles, filled with a bloody fluid, arising on the part.

CAUSES.

Chilblains are apt to be brought on by the sudden application of heat to a part, which has been exposed to cold, as well as by the sudden exposure of a warmed part to the cold. When the part is in a state of perspiration at the time of being thus exposed, chilblains are still more likely to happen. The complaint most readily occurs, when the skin is tender, and irritable, and not accustomed to the cold. Hence, children, young persons, and women who have been brought up in a very delicate manner, are most frequently afflicted.

TREATMENT.

1. The best plan of guarding against chilblains is, to accustom the skin to moderate friction; to avoid hot rooms, or making the body too warm; to adapt the clothing to the state of the weather; to wash the body frequently with cold water; to take regular exercise in the open air in all weathers; and not to go suddenly out of the cold, either into a warm room, or very near the fire.

2. The inflammation, attending chilblains of the first and second degrees, is of a peculiar kind, and is not benefited by common antiphlogistic means. In some constitutions spirituous applications are serviceable; in others, oily and emollient substances. Bathing the part affected, several times a day, in ice-cold water, till the heat and pain subside, is highly praised. Always after being bathed, the part is to be rubbed dry with a towel, and then covered with leather, flannel, or diachylon plaster. Washing chilblains with lime-water, water containing muriatic acid, or with hot sea-water; applying to them camphorated spirit of wine, or the soap liniment; are approved methods. When chilblains are in the ulcerated state, the sores may be advantageously dressed with some of the unguentum resinæ flavæ, in which the hydrargyrus nitratus ruber is blended. Some-

times, lint, dipped in the tinctura myrrhæ, laid on the ulcers, and covered with a common pledget, answers the best. Chilblains, accompanied with sloughing, are to be poulticed till the dead parts are thrown off. A cataplasm, made with oatmeal and porter, is in great repute.

COMPRESSION OF THE BRAIN.

SYMPTOMS.

The symptoms, arising from pressure upon the brain, are much the same, whether it is produced by an extravasation of blood, or by a depressed fracture of the skull. The blow, which has been received, generally stuns the patient, who is found lying almost lifeless, with cold extremities. When the force of the blow has not been above a certain degree, and has not occasioned a depressed fracture, the patient often gradually revives, in proportion as the first effects of the shock upon the brain subside. In short, a complete interval of sense frequently occurs, until, at last, the inward hemorrhage increasing, the patient grows drowsy, lethargic, and universally insensible. He now lies with a slow, laborious, and stertorous respiration. His pulse is slow, and his pupils are generally dilated, and motionless. However, when the

bleeding is, in the first instance, very copious, or the concussion of the brain has been very violent, the patient, of course, has no return of sense at all after the receipt of the injury.

When pressure on the brain is occasioned by a collection of matter, under the skull, on the surface of the dura mater, the scalp rises up over the abscess in the form of a puffy tumor, and the patient has symptoms of an inflamed dura mater, with fever, &c.

TREATMENT.

1. Whether the compression be produced by a depressed fracture, by extravasated blood, or by secreted matter, the indication is to remove the pressure as quickly as possible. The piece of bone beaten inward is to be raised, or taken away, with the elevator, trephine, or one of Mr. Hey's saws. The blood, or matter, is to be let out, by making a perforation in the cranium with a trephine.

2. A second, not less important, indication is, to avert and lessen inflammation of the brain and its membranes, by copious bleeding, especially from the temporal arteries, by the use of aperients, and antimonials. The head may also be blistered.

CONCUSSION OF THE BRAIN.

SYMPTOMS.

There are two stages of concussion. In the first, the patient is found in a stunned state, with cold extremities, and pulse hardly perceptible. When the external violence has not been above a certain degree, the senses gradually return in proportion as the immediate effects of the blow go off. The patient is now sick, which is not the case with persons labouring under much pressure on the brain, the great effect of such pressure being that of producing an universal insensibility of the body, and, consequently, of the stomach. The pulse is slow, and sometimes intermits.

The second stage of concussion commences when the first effects of the shock on the brain subside, and symptoms of irritation and inflammation of this organ begin. Inflammatory fever comes on; the pupils of the eyes become contracted; the vessels of the eye grow red and turgid; the pulse is small and frequent, and the patient delirious.

TREATMENT.

1. A loose and fallacious analogy, between the insensibility in fainting, and that, which attends a concussion of the brain, has led some to

recommend the administration of wine, brandy, volatile alkali, and the most powerful stimulants, as soon as the patient can be made to swallow. In the first stage of the symptoms, perhaps little can be done with much effect. But, in the second, the use of stimulants seems quite unjustifiable. The circumstance of the brain having now recovered some of its powers, is surely a strong argument, that it will continue to do so, without the aid of such medicines, as must tend to augment the inflammation of the brain, on which the main peril of the case depends.

2. The most successful practice is, to treat concussion of the brain upon antiphlogistic principles. Copious and repeated bleedings, purgatives, antimonials, Dover's powder, cold washes to the head, blisters to the scalp, &c. are proper. The principal thing, however, is to keep down the pulse by a free use of the lancet.

DISLOCATIONS.

A DISLOCATION, or luxation, is said to happen when the head of a bone is thrown from its corresponding articular cavity, or surface.

The joints are generally more subject to dislocations, in proportion to the quantity and

variety of motion of which they are capable. These accidents are very uncommon in such diarthrosis articulations, as merely allow a slight yielding motion to take place. They are not so unfrequent in the ginglymoid articulations. In the orbicular ones, they occur with a facility, proportioned to the extent and variety of motion, in such joints. For reasons of this kind, the os humeri is luxated nearly as often as all the other bones together.

Dislocations of the elbow and knee are scarcely ever complete, owing to the great extent of the articular surfaces. These luxations may happen forwards, backwards, or to either side. They never can be produced, without the operation of considerable violence, and a proportionate injury of the soft parts, the inflammation of which is much more to be feared than the dislocation itself. In these instances, the diagnosis is in general very simple, because the quantity of soft parts over the bones is not great. The reduction is also easily effected by pressing the ends of the bones in opposite directions. The thigh and arm are liable to be luxated in any direction; the accident is always complete; and the reduction more or less difficult.

Besides luxations of ginglymoid and orbicular joints, there are other dislocations of a par-

ticular sort, as those of the clavicle, of the radius from the ulna, of the kneepan, and of the fibula from the tibia.

When the luxated head of a bone is protruded through the skin, or when the case is joined with an external wound leading into the capsular ligament of the joint, the dislocation is termed *compound*, and is far more perilous, than when *simple*. What we shall have to say of compound fractures will, for the most part, be applicable to compound dislocations.

There being immense diversity in the nature and treatment of dislocations, it is necessary to treat of each case separately.

1. Fractures of the clavicle are estimated to happen six times as often as luxations, to which both its ends are liable. The sternal end may be dislocated forwards, upwards, and backwards; but, never downwards, the accident being prevented in that direction by the cartilage of the first rib. The luxation forwards is the most common, and is readily known by the projection, under the skin, in front of the sternum; by the unnatural direction of the clavicle; by pain, the dragging of the sterno-cleido-mastoideus muscle, and by the inclination of the head towards the affected shoulder. This case demands similar treatment to that of a fractured clavicle. Luxations of the sternal end of this

bone upwards and backwards are more uncommon: from the superficial situation of the end of the bone, the diagnosis is easy; and the same treatment is required as in the foregoing instance. Luxations of the scapulary end of the clavicle are very unfrequent. They are prevented by the strong ligaments, which tie the clavicle to the scapula; and it is only when these are ruptured, that the first bone can slip over the acromion. Falls on the shoulder, aided by a violent spasm of the trapezius muscle, may occasion the accident. The case may be known by the deformity of the shoulder, the pain, the impossibility of moving the arm, &c. The reduction is accomplished by keeping the shoulder backwards, as is done in the treatment of a broken clavicle. A perfect cure is said to be difficult, owing to the tendency of the bone to slip out of its place again, after having once done so. However, a slight weakness of the arm is the only inconvenience arising from the circumstance.

2. Dislocations of the humerus would be far more frequent, if it were not followed in all its motions by that very moveable bone, the scapula. Anatomical obstacles prevent a luxation upwards; it is possible, but rare, backwards; it happens forwards only seldom; it occurs almost always downwards. The latter

case is so common, that some writers think, with Hippocrates, that all primitive dislocations of the humerus happen in that direction, and that the head of the bone is only carried forwards in a consecutive manner. The capsular ligament of the shoulder-joint is weakest and least supported below. Here it is ruptured, when the head of the bone glides downwards off the glenoid cavity, and presses upon it. The head of the bone is strictly pushed through the inferior and internal part of the capsule, so as to be thrown into the axilla, against the external edge of the scapula, between the subscapularis muscle, and tendon of the long head of the triceps. A luxation of the humerus downwards cannot happen, except when the elbow is separated from the trunk. In this condition, falls and blows act upon the bone, as a long lever, and can easily push its head downwards, through the inferior and internal part of the capsule, into the hollow of the axilla. The instinctive action of the great pectoral, dorsal, and other muscles, when a person falls, has also generally a share a facilitating the accident. Deformity of the shoulder, a projection of the acromion, a preternatural depression below it, an obliquity of the arm outwards, a separation of the elbow from the trunk, and a circumscribed, round, very hard

tumor, formed by the head of the bone in the arm-pit, are the symptoms of a luxation of the humerus downwards. The seriousness of the accident is said to be much increased by such an injury of the circumflex nerve, as renders the deltoid muscle afterwards paralytic. No sooner is the nature of the case ascertained, than the reduction should be attempted. A roundish compress is to be put in the axilla, of sufficient size to keep the tendons of the great pectoral and dorsal muscles from being too much pressed upon by the counter-extending means. Upon such compress, the middle of a long folded cloth is to be laid, the ends of which are to be carried obliquely before and behind the chest, towards the opposite shoulder, and to be held by several assistants. Another assistant is to press the acromion from above downwards. By these counter-extending methods, the trunk and scapula are to be fixed. With a large napkin, or table-cloth, applied just above the condyles of the elbow, the extension is now to be made by a sufficient number of hands. The extension is, at first, to be made in the oblique direction of the dislocated bone; afterwards, it is to be made with the elbow more approximated to the side. The surgeon standing by, is to watch for the proper opportunity of pushing the head of

the bone upwards, and backwards, by using the bone as a sort of lever, and inclining the elbow inwards and forwards. The French prefer applying the extending power to the wrist, instead of above the elbow. They think, that, compression of the muscles, surrounding the luxated bone, ought to be avoided, inasmuch as it tends to hinder their elongation, and throws them into violent action. They also believe the plan to be advantageous in making the arm a longer lever. When patients are so exceedingly strong, that the powerful action of their muscles defeats all attempts at reduction, a copious bleeding, and the warm bath, are proper. Inebriating the patient with opium, so as to incapacitate his muscles, may in difficult cases bring about success. The strongest muscles, however, may be fatigued and overcome by gradual and unremitting extension; a method, more effectual, and less dangerous, than the employment of great violence. When multiplied pulleys are chosen for the purpose of making the extension, the utmost care must be taken not to let them operate too powerfully. Richerand has seen the arm almost lacerated from the body by the imprudent use of pulleys. The accomplishment of reduction may be known by the sudden abatement of the pain, the disappearance of the above symptoms, the noise

made by the slipping of the head of the bone into the glenoid cavity, and by the power which the patient now has of carrying his hand to his forehead.

When the dislocation has existed several days, the diagnosis is more obscure, and the reduction more difficult. After a month, the swelling of the parts about the joint, the contraction of the opening in the capsular ligament, and the habituated state of parts to their altered position, render the case almost irreducible. Desault however, by means of great force, used to reduce shoulders, which had been luxated three or four months.

When a luxation of the humerus downwards remains unreduced, it is soon changed into one forwards, or inwards, the head of the bone ascending to just under the coracoid process. Beneath the clavicle, in front of the shoulder, a hard, round tumor is then felt, occasioned by the head of the bone, under the pectoral muscle. Here the head of the bone lodges, and, by compressing the scapula, at last forms for itself an articular cavity. This new joint allows of a good deal of motion; but, the arm can never be carried round; and it has a shortened, emaciated appearance.

The luxation of the humerus inwards, or forwards, is not always consecutive. It may

be primitive, when, in a fall upon the elbow, this part, besides being separated from the trunk, is also inclined backwards. This case is reduced in the same way, as the luxation downwards, with this slight difference, that as the elbow inclines outwards and backwards, the extension is at first to be made in the direction of the luxated bone, and, afterwards, when the head of the bone is disengaged, the elbow is to be inclined forwards and inwards.

In order to keep the bone from slipping out of its socket, after the reduction, the elbow is to be confined close to the side with a roller, the fore-arm is to be supported in a sling, and a piece of the emplastrum saponis is to be put on the shoulder, and be retained there with the spica-bandage.

3. The radius and ulna may both be pushed together, off the lower end of the humerus, either forwards or backwards, inwards or outwards. The dislocation backwards is the most frequent. The olecranon ascends behind the lower head of the humerus, while the coronoid process slips into the cavity destined for the reception of the olecranon. The last process mounts up higher than the internal and external condyles, the arm is half bent, and cannot be extended without great pain. Sur-

geons should be cautious not to let the crepitus, made by the friction of the olecranon and coronoid process against the humerus, deceive them into a belief, that the olecranon is broken. As the mistake would not be found out, till after the swelling had subsided, an anchylosis would be the consequence. For the reduction of this case, one assistant is to hold the arm, and another the wrist. The surgeon is to take hold of the elbow with both his hands, his fingers being applied round the lower end of the humerus, while his thumbs are employed in pushing back the olecranon into its natural situation. When this has been effected, the reduction is complete. The patient should be bled, be put on low diet, have cold saturnine lotions applied round the joint, and, if necessary, leeches. When the inflammation and swelling of the joint are abated, the elbow is to be bent and extended a little every day, in order to prevent anchylosis. The fore-arm is to be quietly supported in a sling.

The dislocation forwards is accompanied with a fracture of the olecranon. The heads of the bones having been reduced, the rest of the treatment resembles that of the broken olecranon. There is much danger of an anchylosis, in consequence of the long time, during which it is necessary to keep the joint motionless.

Anchylosis is also very apt to follow dislocations inwards, or outwards, which fortunately are not frequent, and never complete. The diagnosis and reduction are too simple to need explanation. Bleeding, cold washes, and antiphlogistic remedies, must not be neglected.

When the prone, or supine motion of the hand is executed with violence, and to too great an extent, the upper head of the radius may be forced out of the little sigmoid cavity of the ulna, forwards, or backwards. The luxation backwards is the most frequent. The hand is fixed in a very prone position, and cannot be moved into the supine one. The head of the radius forms a tumor on the outside of the olecranon, and a depression may be felt below the external tuberosity of the humerus. In reducing this case, the patient's elbow is to be taken hold of, and his hand is to be moved into the supine position, at the same time that the head of the bone is pushed from behind forwards. The luxation forwards is less common, though possible. The hand is found fixed in the supine posture. The reduction is effected by moving the hand in the contrary direction, and pressing the head of the bone from before backwards.

A violent wrench of the wrist may dislocate the lower end of the radius off the ulna.

The accident happens most frequently forwards; the hand is fixed in a very prone position; and the two bones of the fore-arm cross very obliquely. In the luxation backwards, the palm of the hand is turned upwards, the wrist deformed, and the fore-arm half bent. The first case is reduced, by an assistant holding the fore-arm, while the surgeon draws the hand into its natural posture. The last case requires the elbow to be held, while extension is applied to the hand, which is at the same time to be moved into the mid-state between pronation and supination.

4. The hand may be dislocated from the lower ends of the radius and ulna, backwards or forwards, outwards or inwards. The two last accidents are the most uncommon. Luxations backwards are apt to be produced by falls on the back of the hand, while this is much bent. The preternaturally bent state of the hand, the impossibility of extending it, and the deformity of the wrist, clearly show what has happened. The reduction is easily accomplished, by the surgeon pulling towards himself the hand, while an assistant holds the elbow, and, by making pressure upon the carpus, to force it into its natural cavity again.

The dislocation forwards may happen from a fall on the palm, while the hand is strongly

extended. After what has been said, the particulars of the reduction of this accident seem unnecessary. In all these cases, means for the prevention and diminution of inflammation are requisite.

With respect to the bones of the tarsus, they are so small, and so strongly tied together with ligaments, that they can hardly be dislocated. The os magnum can alone be considered subject to the accident. It may be pushed backwards out of the deep cavity, formed for its reception. Then it causes a tumor, on the back of the hand, when this is half bent. Such tumor, however, disappears when the hand is extended. A perfect reduction and cure of this dislocation are difficult; but no material inconveniences ensue.

The metacarpal bones, and those of the fingers, are not very subject to dislocations. The first phalanx of the thumb is rather more exposed to the accident backwards. The case is readily distinguished by the deformity and immoveable condition of the thumb. The bone is to be immediately pushed back into its natural place. The hand is to be kept in a sling, and the saturnine lotion is to be applied. Some prefer applying soap-plaster, and longitudinal bits of pasteboard, to the fingers and thumb, after their luxations have been reduced.

5. Notwithstanding the depth of the aceta-

bulum, the strength of the orbicular ligament, and the existence of the ligamentum teres, the thigh-bone is liable to be dislocated from the ossa innominata. Its head may be thrown upwards and backwards, upon the dorsum of the ilium; upwards and inwards, upon the os pubis; downwards and forwards, upon the obturator foramen; or downwards and backwards, upon the os ischium. Of these four species of dislocation, such as happen upwards and outwards, or downwards and inwards, are the most frequent. Every thing conspires to facilitate the last form of the accident. The inner and lower part of the acetabulum has a deep notch in it; there the orbicular ligament has least strength; the ligamentum teres makes no resistance to such displacement; the head of the bone may slip upon the obturator foramen, without the latter ligament being at all ruptured; and, lastly, abduction is one of the most extensive movements, of which the thigh is capable. No anatomical reasons, on the other hand, can be assigned for the frequency of luxations upwards and backwards. In this direction, the brim of the acetabulum is higher, and the orbicular ligament thicker and stronger, than any where else.

In a fall from some height, upon one of the knees, inclined forwards and inwards, the head

of the thigh-bone pushes against the upper and outer part of the acetabulum, and is driven upwards through the orbicular ligament. The action of the glutei muscles also promotes the ascent of it upwards and backwards, while nearly all the muscles of the thigh become relaxed by the approximation of their attachments.

The thigh is shortened, a little bent, and placed in the state of abduction; the whole limb and the toes are turned inwards; and the trochanter major is brought nearer to the anterior superior spine of the ilium. The limb cannot be lengthened without the reduction being accomplished, nor can the toes be turned outwards, unless the head of the bone be replaced. If the patient attempts to walk, he merely touches the ground with the point of his foot. The rotation of the limb inwards, is owing to the resistance of the orbicular ligament, the thick portion of which, arising from the anterior inferior spine of the ilium, is stretched in the luxation upwards and outwards.

It is otherwise in the dislocation downwards and inwards. All the muscles, which go from the pelvis to the os femoris, being stretched, turn the whole limb outwards. The triceps, in a striking manner, contributes to this effect.

It forms a prominent line under the skin, obliquely along the inside of the thigh. In the luxation upon the obturator foramen, besides the toes and whole limb being turned inwards, a hard round tumor is felt at the upper and inner part of the thigh; the leg is slightly bent; and the limb manifestly elongated, so that the patient, when he endeavours to walk, is obliged to describe with his limb the segment of a circle. In the dislocation upwards and forwards, the head of the bone is carried towards the junction of the os pubis with the ilium; the limb is turned outwards, but it is at the same time shortened. The head of the bone occasions in the groin a tumor, which makes irksome pressure on the crural nerves, which lie on the outer side of the large blood-vessels. The knee inclines a little backwards. In the luxation downwards and backwards, the head of the bone being pushed towards the junction of the ilium and ischium, it raises and stretches the muscles covering the back of the joint. Hence it is, that the limb is turned outwards. The thigh is lengthened; and a hard tumor is felt at the lower and back part of the buttock. This sort of luxation is seldom primitive. It almost always follows the dislocations upwards and outwards, in consequence of the head of the bone slipping

backwards, a motion which is promoted by the flexion of the thigh upon the pelvis. In this consecutive luxation, the knee and toes are turned inwards, and the limb seems shortened from being bent. A primitive dislocation downwards and backwards, is rare: it sometimes is a consequence of disease of the hip-joint.

The method of reduction is much the same in these four kinds of dislocation. In short, in the displacement upwards and backwards, downwards and inwards, &c. the first thing is always to apply a folded cloth over the bend of the groin on the sound side. The ends are to be carried obliquely towards the haunch of the same side, and held by several assistants. Another long narrow folded cloth is to be applied transversely upon the crista of the ilium of the affected side, and its ends are to be carried horizontally to the opposite side of the pelvis, where the assistants are to take hold of them. These are the counter-extending means, the second serving to keep the pelvis from inclining towards the affected side, and yielding to the extending power. The cloth for making the extension is to be folded and applied round the limb just above the knee, or, as the French prefer, round the ankle, as far as possible from the resistance. A force must be exerted pro-

portionate to the number and power of the muscles attached to the bone. The surgeon, standing on the outside of the limb, is to effect the coaptation by making pressure upon the great trochanter, or upon the prominent head of the bone, so as to direct the latter towards the acetabulum, and make it slip into this cavity, as soon as the extending power has brought it sufficiently near. When the head of the bone slips into such cavity, a particular noise is immediately heard, the pain is diminished, and the limb regains its natural length and power of motion.

A recurrence of the dislocation is to be prevented by keeping the knees together with a roller. A piece of the emplastrum saponis and a roller are also usually applied to the hip, though evidently only for the sake of appearances. Were the soft parts much swollen, cold washes and leeches would be better. The patient is to be kept in bed for eight or ten days, and should take one or two purgative doses.

When a luxation of the thigh is left unreduced, an annihilation of the acetabulum, the formation of a new joint, or else anchylosis, and a wasting and weakness of the limb, are the consequences.

6. The patella cannot be luxated downwards, without the tendon of the extensors of the leg

being ruptured; nor upwards, without the ligament of the patella being broken. The dislocations inwards and outwards may happen without other mischief. The luxation outwards is the most frequent. The inner edge of the bone projects more than the outer, and the articular surface of the external condyle is broader, and less prominent, than that of the inner one. Every thing seems to facilitate the dislocation outwards. The accident happens, when a hard body strikes against the inside of the patella, when the knee is somewhat bent. The luxation, however, is never complete.

In every instance of luxated kneepan, the muscles, attached to the bone, must be relaxed, by extending the leg upon the thigh, and bending the thigh a little upon the pelvis. The bone is then to be pushed inwards or outwards, according as it is displaced. The patient may be bled after the reduction, in order to avert inflammation of the joint. Cold washes may be applied to the part, and, if necessary, leeches. Rest is essentially proper.

7. A complete luxation of the knee, supposes an entire laceration of all the numerous ligaments and tendons, which strengthen this articulation. To cause this mischief, such a force must operate, as has never been observed, if we reject from consideration, the tearing

away of the limbs by cannon-balls. Even incomplete luxations inwards or outwards, are very rare, so much are these accidents opposed by the extent of the articular surfaces, and the strength of the ligaments and tendons. Dislocations forwards or backwards, are also rendered almost impossible, by the manner, in which the patella and crucial ligament resist their occurrence. However, when the leg is fixed, and the body is forced onwards, the tibia may be partly forced away from the lower end of the femur, to one side or another. Such an event implies great violence, and a rupture of many ligaments. The deformity makes the nature of the case very manifest. The reduction is easily accomplished by pushing the heads of the bones in opposite directions, while the articular surfaces are a little separated by a moderate extension of the limb. After the reduction, the indication is to prevent inflammation of the joint by cold washes, leeches, venesection, opening medicines, absolute rest, &c.

8. The fibula is not always fractured by a violent abduction of the foot. Sometimes, though indeed seldom, on the latter part being twisted outwards, the strong ligaments, uniting the lower end of the fibula to the tibia, are ruptured. A dislocation of the upper end of the

fibula can only happen, when its ligaments are morbidly relaxed. In these cases, the application of a piece of the emplastrum saponis, and a roller, is all that can be well done.

9. In a dislocation of the foot, the astragalus must be partly or entirely propelled from the quadrangular cavity, in which it is, as it were, locked; and it is either pushed against one of the malleoli, or before or behind these eminences. An accident, of this sort, cannot happen without the rupture of several ligaments. The most frequent dislocation is that inwards, owing to the malleolus internus being shorter than the malleolus externus. It can be caused by a violent abduction of the foot, and it is readily known by the sole being turned outwards, the pain, the impossibility of motion, and by the tumor, which the astragalus forms below the internal malleolus. The luxation outwards is produced by a violent adduction of the foot. The sole is turned inwards, the instep outwards, and the astragalus projects below the external malleolus.

The dislocation backwards is caused by a violent flexion of the foot; that forwards, by too great extension. In the last case, the astragalus is forced in front of the bones of the leg, the anterior ligaments of the joint are ruptured, the heel shortened, the foot lengthened,

and permanently extended. In the luxation backwards, the projection of the heel is increased, the foot is shortened and bent, the astragalus is situated behind the tibia, and the posterior ligaments are ruptured. Sometimes, in compound cases, the astragalus is so detached from the os calcis, that surgeons take it away; and, if a cure is effected, an anchylosis cannot be avoided. A luxation of the foot inwards, is often complicated with a fracture of the lower part of the fibula.

Dislocations of the foot are not difficult of reduction, when care is taken to relax the strong muscles of the calf by position. The case is then generally put up, and treated just like a fracture of the leg.

10. Of all the tarsal bones, the astragalus alone is subject to be dislocated, which it may be from the cavity in the posterior surface of the os scaphoides. This is liable to happen, when the fore-part of the foot being fixed, the patient falls backwards. The head of the astragalus is then forced upwards from the scaphoides, and projects upon the instep. An endeavour should be made to force the bone back again into its place by pressure. Some emplastrum saponis and a roller are then to be applied, and quietude enjoined. The first phalanx of the great toe is perhaps liable to be

dislocated. The other phalanges of the toes, and the metatarsal bones, can hardly ever be luxated.

11. When the mouth is much opened, the condyles of the lower jaw advance forward upon the eminentiæ articulares. A very slight cause will now make them slip under the zygomatic processes. The lower jaw is only subject to this one kind of luxation forwards, and the accident is generally occasioned by yawning, laughing, or blows on this bone when the mouth is open. The symptoms are, great pain; the mouth is wide open, and cannot be shut; a depression is felt in front of the ear; the coronoid process projects under the cheek; the spittle flows abundantly out of the mouth; the arch of the teeth in the lower jaw is situated more forwards than the arch of the teeth above. The patient is also incapable of speaking and swallowing. Sometimes only one condyle is dislocated; in which case, the chin inclines to the opposite side of the face.

In order to reduce this luxation, the surgeon, having guarded his hand with a thick pair of gloves, should place his thumbs upon the grinders on each side, and with his fingers grasp the chin and base of the jaw. The bone is now to be moved as a lever, the grinders being depressed, and the chin raised. No

sooner are the condyles thus extricated from under the zygomatic processes, than they instantly slip into their proper place, and the jaw is shut with considerable force. The same bandage is then to be applied, as in cases of fractured jaw.

ECTROPIUM.

SYMPTOMS.

This denotes a turning outwards of the eyelids. The lower one is mostly affected. It separates from the eyeball, and hangs down over the cheek, its internal membrane becoming everted, and the lower part of the eye uncovered. The exposure induces a chronic inflammation both of the eye and eyelid. The tears cannot find their way into the puncta lachrymalia, and fall over the check.

CAUSES.

One kind of ectropium depends upon a thickening of the lining of the eyelid, arising mostly from a congenital laxity of this membrane, and afterwards increased by chronic ophthalmy. Another species of ectropium originates from a contraction of the skin of the eyelid or adjacent part of the face, and is

mostly the consequence of a cicatrix, after the small-pox, deep burns, the excision of some tumor, &c.

TREATMENT.

When the loss of substance, in the second kind of ectropium, exceeds a certain quantity, a perfect cure is impossible. When so much is lost, that the edge of the eyelid is adherent to the margin of the orbit, the case admits of no melioration. The first species of ectropium, in a recent state, may be cured by destroying the fungous thickening of the inside of the eyelid with the argentum nitratum, some oil being put on the eschar as soon as it is formed, to keep the caustic from hurting the eye, which may also be washed with milk. The application of the caustic is to be repeated as often as necessary, after which, simple collyria will complete the cure. When the disease is inveterate, the best plan is to cut away all the thickened part of the inside of the eyelid, with a pair of convex-edged scissors, or a scalpel and forceps. A compress and bandage are then to be put over the outside of the eyelid.

The second species of ectropium is also curable or improvable by a similar operation, in which a piece of the inside of the eyelid is to be cut away.

EMPHYSEMA.

SYMPTOMS.

When the lungs are wounded, the air, which escapes from the breach, cannot always find a ready exit from the chest. When the breach is occasioned by the point of a broken rib, the air must obviously have no passage, and, in proportion as it escapes from the lung, must either accumulate in the chest, or be diffused in the texture of the body. When there is a large external wound, conjoined with that of the lungs, the air finds its way outwards. But, when the outer wound is narrow, or does not exist at all, as in cases of broken ribs, the air, effused in the chest, is forced, when the thorax contracts in expiration, through the breach in the pleura costalis, and thence diffuses itself through the communicating interstices of the cellular membrane nearly over the whole body. The cellular substance is every where blown up to an enormous thickness, and the air at length distending the cellular texture of the viscera, the case hardly admits of a cure. In proportion as the air finds difficulty in getting out of the chest, either through the smallness of the wound, or from the cellular substance being already much distended, it collects in the

chest, and makes so dangerous a degree of pressure on the diaphragm, mediastinum, and both lungs, as to bring on symptoms of suffocation and death.

TREATMENT.

When the emphysema is not very extensive, and the symptoms of suffocation are not urgent, scarifications, to let the air escape from the cellular substance, and rubbing the parts, may suffice. When the difficulty of breathing still increases, and the emphysema expands, the wound in the chest must be dilated, or, in case of a broken rib, an incision must be made into the thorax, in the manner related in speaking of empyema. A cannula might be kept in it for two or three days, till the breach in the air-cells of the lungs was shut up with coagulating lymph.

EMPYEMA.

SYMPTOMS.

The previous existence of inflammation in the chest; the cessation of acute fever, pain in the side, and of the dry cough attendant on such inflammation; the irregular shiverings, and hectic fever, following these symptoms; the difficulty of breathing; the uneasiness on lying

on the sound side; and the preternatural expansion of the diseased side of the chest; indicate an accumulation of purulent matter in the thorax, or, as it is termed, an empyema. Making an opening for the discharge of the abscess should no longer be delayed.

OPERATION.

This consists in making an incision between the sixth and seventh, or fifth and sixth true ribs, about two inches long, at the place where the serratus major anticus meets the indigitations of the external oblique muscle. The intercostal muscles and pleura are then to be carefully divided, by cutting cautiously near the upper edge of the lower rib, so as to avoid wounding the intercostal artery. A proper cannula is then to be worn, till all danger of a fresh accumulation of matter is over.

ENCANTHIS.

SYMPTOMS.

The incipient encanthis is a small, soft, reddish, or sometimes slightly livid excrescence, which grows from the caruncula lachrymalis and adjoining part of the conjunctiva. The inveterate

THE TANJORE MAHARAJA SERFOJI'S SARASVATI MAHAL
encanthis is often of considerable size, its roots extending along the inside of the eyelids. The disease hinders the eye from being perfectly closed; keeps up chronic ophthalmy; and impedes the flow of the tears, through the puncta lachrymalia, into the nose. There is, moreover, an encanthis, which puts on a cancerous malignity, denoted by the dark-red, or leaden colour, the great hardness, the darting pains, the bleeding disposition, the ulcerations, fungi, and sanious discharge, of the disease.

TREATMENT.

The cure of the encanthis is effected by cutting the excrescence away, together with the appendages reaching along the inside of the eyelids. This is best done with a small scalpel and a pair of forceps. Care must be taken not to be too bold with the knife in dividing the base of the excrescence, for fear of injuring the lachrymal sac and puncta lachrymalia, so as to cause an irremediable flux of tears over the cheek. After the operation, the eye is to be well washed with cold water, and covered with a compress of fine linen. After five or six days, touching the sore with the argentum nitratum, and bathing the eye with a vitriolic collyrium containing the mucilage of quince-seeds, will complete the cure.

ERYSIPELAS.

SYMPTOMS.

It is a peculiar inflammation, primarily affecting the skin, though the subjacent cellular substance may become affected. The swelling is inconsiderable, and, indeed, hardly perceptible. There is rather tension, than tumefaction. The redness is not so great as in phlegmon, and disappears upon being pressed with the fingers. The affection spreads irregularly, is not circumscribed, and often exhibits a yellowish tint. The complaint is attended with a pungent heat, and burning pain. Erysipelas also differs from common inflammation in having a tendency to change its situation, frequently spreading from the face to the limbs, and from one place to another. Erysipelas is said to be seldom idiopathic, but, almost always, symptomatic of some internal cause, especially bilious irritation in the stomach and duodenum. Hence, it is mostly preceded, and accompanied, by gastric complaints. Hence, also, internal remedies have much more influence over the disorder than outward applications.

There is a species of erysipelas, which depends upon cutaneous irritation, as from friction, the application of rancid ointments, a slight burn,

&c. The treatment of this case is exactly similar to that of phlegmon.

A bilious constitution, hot weather, bad aliment, want of exercise, &c. predispose to erysipelas. Under such causes the functions of the digestive organs become impaired, and, after some indisposition, fever makes its attack with rigor, to which succeed heat, and an exacerbation of the gastric complaints, such as painful tension of the epigastrium, bitterness in the mouth, a tongue covered with yellow mucus, nausea, vomiting of a greenish bitter fluid, &c. The head-ach is insupportable; the pulse is quick and hard; the patient experiences great heat, thirst, a fondness for acids, and aversion to all animal food. In the midst of all these symptoms, the heat becomes more and more annoying in some particular part of the skin, and here the erysipelas comes out. The eruption most frequently makes its appearance on the face, affecting the subjacent cellular membrane, and extending to the scalp. Coma and delirium now often occur. After some days, the inflammation abates, and the cuticle peels off. In bad cases, the erysipelas produces abscesses and extensive gangrenous mischief in the skin, and cellular membrane.

TREATMENT.

Erysipelas from external causes requires ordinary antiphlogistic treatment. The bilious erysipelas may, indeed, admit of bleeding, when the patient is plethoric, comatose, or delirious; but, such an evacuation is to be practised only seldom, and with great caution. An emetic is to be first given, and then cooling drinks, rendered laxative with cream of tartar, tamarinds, &c. Topical applications to the bilious erysipelas are regarded by many as possessed of little efficacy. Some cover the part with powdered starch: some apply a decoction of poppies; others, the saturnine lotion.

EYE, EXTIRPATION OF.

Cancer and fungous hæmatodes of the eye sometimes make its removal necessary for the preservation of life. The surgeon is to begin with dividing the external angle of the eyelids. He is next to cut the conjunctiva, connected with the lower eyelid, and then the same membrane, where it proceeds to the upper one. The diseased eye is now commonly taken hold of with a hook, with which it is drawn forwards by the operator, as he proceeds in the division of the muscles, optic nerve, &c. The

diseased mass having been taken out, the next object is carefully to remove any indurated portions of cellular substance left behind, on doing which completely the success of the operation will greatly depend. The lachrymal gland, in which disease is so apt to recur, is always to be removed. The hemorrhage will cease on filling the orbit with soft lint, and applying a compress. Bleeding and low diet are afterwards proper. The dressings should not be changed for about four days. When any fungous granulations arise, they must be freely attacked with caustic. Too often the disease recurs, and proves fatal. When the eyelids are diseased, no reason should lead the surgeon to spare them in the operation.

FISTULA LACHRYMALIS.

SYMPTOMS.

When the nasal duct is so obstructed, that the tears cannot descend from the eye into the nose, they accumulate in the lachrymal sac, and, after filling that, drop over the cheek. The weeping of the eye, or *epiphora*, as it is termed, indeed, is always a symptom of some stoppage within the lachrymal puncta, sac, or nasal duct. In the preceding state,

the lachrymal sac is distended with a mixture of tears and mucus, and forms a little tumor just below the inner angle of the eye. On pressure, the contents of the sac regurgitate from the puncta lachrymalia, and the prominence for a time subsides. In consequence of the nearness of the eye to the disease, it is generally weak, and often more or less inflamed. In the course of time, the skin and sac ulcerate, and a fistulous opening forms a little on one side of the root of the nose. Sometimes the os unguis and vertical process of the upper maxillary bone are rendered carious. The epiphora is only an effect of some obstruction either in the lachrymal puncta and duct, or in the lachrymal sac and nasal duct.

CAUSES.

The puncta may be affected with atony, in consequence of blows on the eyelids, or be obliterated by small-pox ulcers. These cases are said to be incurable. The same may be observed, with regard to instances, in which the lachrymal ducts are annihilated. An epiphora may be the effect of an encanthis, or other tumor in the inner angle of the eye, a polypus in the nose, a fungus of the antrum, an ectropium, a trichiasis, &c. A weeping

state of the eye is an inevitable attendant on the fistula lachrymalis, or stoppage in the nasal duct. The fistula lachrymalis itself is sometimes the mere effect of a neighbouring tumor, or disease, which compresses, or stops up the nasal duct. Often it originates from violent colds, or other causes, by which the lachrymal parts of the eye are more or less inflamed, and made to secrete a thick mucus, which, with a certain thickening of the membrane lining the nasal duct, renders this tube impervious. In advanced stages of the disease, the nasal duct is permanently filled up, and sometimes quite obliterated. Scarpa believes, that the primary cause of the fistula lachrymalis does not exist either in the lachrymal sac, or the nasal duct; but, depends upon a morbid state of the inside of the eyelids.

TREATMENT.

1. A species of epiphora, arising from inflammation of the eye, and consisting of too copious a secretion of the tears, may be cured by first subduing the ophthalmy, and then strengthening the eye with cold water, or a collyrium of zincum vitriolatum.

2. When the obstruction in the lachrymal sac and nasal duct is recent, and caused partly by a slight thickening of their membranous

lining, but, chiefly, by a lodgment of mucous matter, two indications present themselves: one is, to check and correct the morbid secretion from the inside of the eyelids; the other, to wash out the lachrymal passages throughout their whole extent. The first object may be accomplished by smearing the inner surface of the eyelids with a little of the ung. hydrarg. nitrat. once or twice a day, and washing the eye with a vitriolic collyrium. The second purpose is accomplished by means of Anel's syringe, with which warm water is to be injected into the lachrymal sac through the lower punctum lachrymale, a finger being placed on the upper punctum, to keep the fluid from escaping. When this plan, persisted in for some days, does not avail, an attempt may be made to break the obstruction by passing Anel's little probe through the upper punctum down towards the nose. Sir W. Blizard has advised distending the sac with quicksilver, by means of such a tube and pipe as are used for injecting the lymphatics, in which method, the force will be in a ratio to the height of the column of mercury employed.

3. When the obstruction in the nasal duct cannot be thus removed, a small puncture is to be made in the sac, with a very narrow pointed lancet, supposing no opening to exist

already, or none in a favourable situation. The blunt end of a smallish probe is next to be introduced into the puncture, and pushed down the sac and duct with sufficient force to overcome the obstruction in this canal, and pass into the nose. The probe is now to be withdrawn, and Ware's silver style passed down, and worn for a length of time. The style is to be taken out, and some warm water injected down the passage two or three times a week, care being taken to avert any disposition of the eye to inflame by a saturnine collyrium.

4. When the ductus nasalis is quite obliterated, it is necessary to make an artificial passage for the descent of the tears by perforating the os unguis. Ware's nail-headed style is then to be introduced into the new aperture, and worn as in the case where the natural passage exists.

FRACTURES.

A SIMPLE fracture implies a solution of continuity in a bone, generally caused by external violence. A *compound* fracture is so called, when the accident is joined with a wound in the skin, which wound communicates with the injury of the bone. When the bone is broken in more places than one, the fracture is termed

comminuted. When the case is attended with injury of a large artery, nerve, &c. it is named a *complicated* fracture.

The difference of these cases may chiefly be referred to the particularity of the broken bone, the situation of the fracture on the bone, the direction of the solution of continuity, the respective position of the fragments, and circumstances rendering the accident simple, compound, &c. Fractures may be oblique, or transverse; but, according to Petit, never longitudinal, since any cause capable of producing a solution of continuity lengthwise, can much more readily produce it transversely. The bones may be broken by causes acting immediately upon them, or by counter-blows where the force has been applied at some distance from the injury. The bones are more or less subject to be broken according to their position, their office, and the age or youth of the patient. Some diseases increase the fragility and weakness of the bones, and thereby facilitate the occurrence of fractures. The only certain marks of fractures are derived from palpable alterations accompanying such accidents, as deformity, a shortening of the limb, a crepitus arising from the ends of the bone rubbing against each other. The prognosis is unfavourable in proportion as the bone has numerous strong muscles

surrounding it, and capable of producing displacement of the ends of the fracture; as the fracture is near a joint; as it is more or less oblique; the patient advanced in life; the bones affected with previous disease; the soft parts contused; or blood-vessels wounded. Nothing, however, causes so serious a difference, as the external wound which leads down to the broken part of the bone, and makes the case a compound fracture. The general treatment of fractures comprehends the reduction of the fragments, the maintenance of them in this state by means of a proper posture, splints, bandages, &c. and the employment of plans adapted to each particular complication.

The union of a broken bone is accomplished by a process resembling that, by which wounds in the soft parts are united. The chief difference is, that, after a certain time, the callus, or new-formed uniting substance, has lime deposited in its texture, so as to make it resemble the old bone, in regard to firmness and inflexibility.

1. A minute crack in any of the bones of the skull is termed a *capillary fissure*. A fracture happening at a distance from the place where the violence was directly applied, is called a *counter-fissure*. A simple undepressed fracture of the cranium is not characterized by any essential symptoms. Whatever bad

symptoms do exist, have no dependance on the breach of continuity in the bone, but, originate entirely from the concussion which the brain has suffered from the blow, and sometimes from the pressure of an extravasation of blood underneath the skull. It appears from the experience of Hill, Abernethy, &c. that a fracture of the cranium may even be sometimes depressed in a certain degree, without the accession of serious indisposition, or of such complaints, as require the use of the trephine. A depressed fracture, however, is more commonly accompanied by the dangerous symptoms of pressure on the brain, and requires the same treatment as *compression*. An undepressed fracture demands the same treatment as *concussion*, the main object being to avert inflammation of the brain and its membranes. When suppuration under the injury is denoted by rigors, marks of pressure on the brain, a puffy tumor of the scalp, an unfavourable change of any wound on the head, &c. the bone should be immediately perforated with a trephine, and an outlet made for the matter.

2. The clavicle is exceedingly often broken, having a superficial exposed situation, being slender and only covered with skin, having its middle part unsupported, and being destined to receive and transmit to the sternum every

impulse made by the motions of the upper extremity. Its middle portion is most frequently fractured. In every case of broken clavicle, the external fragment is displaced, being drawn down by the weight of the arm, and pulled inwards, under the internal fragment, by the great pectoral muscle. Immediately the fracture happens, and incapacitates the clavicle from keeping the shoulder at a certain distance from the sternum, the arm falls forwards towards the breast. One of the most striking symptoms is the inability to move the hand circularly to the forehead. The mobility of the fragments may be plainly felt and seen, as well as the projecting end of the inner one; and on moving the shoulder, a crepitus is perceptible. The reduction of the fracture is accomplished by raising the shoulder and pushing it backwards and outwards, in which position it ought to be retained, till the ends of the bone have grown together. The figure of 8 bandage, which is commonly employed by English surgeons, serves to draw the shoulder backwards; but, has no effect in pushing the scapular portion of the clavicle outwards, and is highly objectionable, inasmuch as it tends to press it downwards, instead of raising it. Desault invented an apparatus, which operated so as to keep the shoulder elevated and drawn

backwards. A wedgelike compress, not quite so long as the arm, and made of wool, or horse-hair, is placed with its broad base in the arm-pit. Two tapes attached to the base of the compress, are carried before and behind the chest, and tied over the opposite shoulder. The patient's fore-arm being half-bent, the surgeon is to take hold of his elbow, and push it inwards and a little forwards, at the same time raising it and pushing it with some force against the side of the chest. In this manœuvre, he uses the os humeri as a lever, for pushing the shoulder outwards, and the external fragment into its natural situation. The elbow being thus raised, and approximated to the trunk, the reduction of the fracture is accomplished. The surgeon has now only to fix the limb immoveably in this position, until an union of the bone has taken place. With this view, the arm is to be entrusted to an assistant, who is to keep it in the above position, and support the fore-arm placed horizontally in front of the breast. A long single-headed roller is then to be applied round the trunk and arm together, from the shoulder down to the elbow, where the turns of the bandage are to be tighter than they are higher up. The only desideratum now is something to support the arm. For this object, Desault applied a second bandage, the end of

which was put in the axilla of the sound side. The roller was then carried obliquely in front of the chest over the affected shoulder. Next it was conducted behind the arm, and having passed under the elbow was brought obliquely up in front of the chest. Having reached the axilla on the sound side, the roller was there fixed by making one turn of it round the shoulder. It was then carried across the back, over the compress, and down in front of the shoulder and arm, under the elbow, and obliquely behind the back to the arm-pit, where the application began. This plan is repeated, till all the roller is spent. Pins are to be put, wherever they promise to be useful, and the hand is to be placed in a sling. In this country, it is usual to put a piece of the emplastrum saponis just over the fracture.

3. Fractures of the lower jaw are attended with acute pain; an inequality in the line of the basis of the bone; an irregularity in the arch of the teeth, those on one side being lower than the rest; and a crepitus, which may be felt on handling the jaw. When one of the condyles, or rami, is broken, there will be no alteration in the arrangement of the teeth; but, still the case will be rendered sufficiently manifest by the pain in front of the ear, and the crepitus. The reduction of fractures of the

lower jaw is fulfilled by drawing upwards and forwards the displaced part, which is usually pulled downwards and backwards by the muscles attached to the jaw and larynx. The reduction is to be maintained by means of a split cloth, or bandage with four tails. The centre of such bandage is applied to the chin, while the back tails are to be pinned to the fore part of the patient's nightcap, and the front ones somewhere behind his head. However, before putting this bandage on, a piece of the emplastrum saponis is commonly applied, and a bit of pasteboard, softened in vinegar, laid along the side and under the basis of the jaw. The latter, on becoming dry, forms a most suitable instrument for preserving the two fragments on the same level. A compress is often useful, when laid just under, and behind, the base of the fragment, which was displaced.

4. The body of the scapula is seldom fractured, being covered by large muscles. The acromion, however, is often broken. The accident is easily recognised, in consequence of the superficial situation of that process. The shoulder is deformed; and the acromion is depressed, but rises to its proper place again on the elbow being lifted up and placed close to the side. In this manner, the surgeon effects the reduction, which is to be maintained by

binding the arm close to the trunk with a roller, and keeping the elbow up to a proper height with a sling or other sort of bandage.

5. When the os humeri is fractured transversely about its middle part, below the nsertion of the deltoid muscle, there is not much displacement, owing to the way in which the fragments are kept steady by the antagonizing action of the triceps and short head of the biceps upon them. The displacement is yet less, when the fracture is situated near the lower end of the bone, where the width of the bone is greater, and the biceps and triceps still antagonize each other. When, however, the fracture is oblique, the lower fragment, being drawn upwards by the muscles connected with it, mounts over the upper one. When the solution of continuity is above the insertion of the deltoid, this muscle pulls the lower fragment outwards, and then upwards, upon the outside of the upper one. When the fracture is situated above the attachment of the pectoralis major, latissimus dorsi, and teres major, these muscles draw the lower fragment inwards, and then upwards. The shortened state and altered direction of the arm; the inequality felt on tracing the humerus with the fingers; the crepitus, pain, and sudden loss of the use of the limb; make the diagnosis sufficiently plain.

The case is more obscure, when the neck of the bone is broken. Here the acromion does not form a projection, under which a depression may be felt in the natural situation of the head of the humerus. The upper part of the shoulder retains its prominent form; the depression is lower down; the irregular end of the lower portion of the bone may be felt in the axilla; and a crepitus on moving the limb. The French treat fractures of the neck of the humerus much in the same way as fractures of the clavicle. The upper end of the lower portion of the bone is kept outwards by confining the elbow against the side. Before putting the wedge-shaped compress in the axilla, however, a roller is applied to the whole limb. In this country, the treatment of fractures of the neck of the humerus does not differ from that of other fractures of this bone. As splints, however, can have no useful effect on fractures so high up, Desault's plan should be universally preferred. In fractures of the body of the bone, the fore-arm should be held by one assistant in a bent position, while another draws the lower fragment downwards by gentle extension. The surgeon is then to adjust the ends of the fracture; apply a piece of the emplastrum saponis to the soft parts surrounding the injury; put on a roller; and then four pads and splints,

which are to be fastened on with tapes. Lastly, the fore-arm is to be laid in a sling, which, however, should not be made to press the elbow at all upwards. Sometimes, fractures of the humerus remain disunited. This accident has been referred to the broken surfaces not being in exact contact, to the limb having been too much moved, to old age, and to a general languor in the constitution. The plan, recommended for the two first of these instances, is to reduce the fracture anew, and to keep the limb quite motionless. The advanced age of a patient sometimes makes it necessary to continue the employment of the splints, &c. a considerable time, and to have recourse to tonics. When many months have elapsed since the accident, and the motion in the situation of the fracture evinces the formation of a new joint, some advise the ends of the bone to be forcibly rubbed against each other. This painful manœuvre excites an irritation, which leads to the production of callus. Here the application of splints must be followed up beyond the usual time. When the new joint has been formed too long for this plan to be successful, the only chance of effecting an union of the bone is by cutting down to the fracture, and sawing off its ends. White several times practised such an operation with success.

Many others have attempted it unavailingly. Richerand saw a case, where the patient died on the sixth day after the operation.

6. The two bones of the fore-arm may be broken together, or only one of them may be thus injured. When they are both fractured, or when the ulna alone is broken, the accident is generally the effect of some blow, or violence applied directly to the fore-arm. But, when the radius is fractured by itself, the injury is almost always produced by falls on the hand. The diagnosis of these cases is rendered plain, by the previous blow on the fore-arm, or the fall on the hand; by the pain; by the deformity, which is the more apparent as the bones are on one side merely covered with skin; by the mobility of the fragments; the crepitus; and the impediment to the pronation and supination of the hand. When only one bone is broken, the displacement is, indeed, not considerable, the one which is entire, serving like a splint, to steady the other. However, in all cases the ends of the fracture have a tendency to incline towards the centre of the fore-arm, and thereby diminish the interosseous space. One of the chief objects in the treatment of fractures of the fore-arm is to preserve the natural width of the interosseous space. With this view, the muscles are to be pressed

between the bones, while two assistants, taking hold of the elbow and hand, moderately extend the fore-arm. Some soap-plaster is now to be applied over the injury, and a pad and splint laid along the anterior and posterior surfaces of the fore-arm. The application of a roller, under the splints, seems likely to do harm by pressing the ends of the fracture inwards. It is best to put it over the splints, so as to fix them in their respective places. During the whole of the treatment, the fore-arm is to be supported, from the elbow to the fingers, in a sling.

7. All parts of the thigh-bone are liable to fractures, notwithstanding the vast thickness of the soft parts, which cover and protect it from external violence. The fractures are mostly produced by a force applied at each end of the bone, and generally happen somewhere about its middle portion. The fragments may be displaced in relation to the diameter of the bone, its length, its direction, and its circumference. By the last sort of displacement, is meant a rotation inwards, or outwards, of the lower fragment, while the upper fragment undergoes no such movement. The most difficult kind of displacement to prevent, in oblique fractures, is that, which happens in relation to the length of the bone, the lower fragment

being drawn upwards over the inside of the upper fragment by the action of the triceps, rectus, semimembranosus, semitendinosus, and, in short, by all those muscles, which arise from the pelvis, and are inserted, either into the os femoris, or the bones of the leg, below the fracture. The triceps being attached to both fragments, displaces them, in regard to the direction of the limb, by making them project forwards. The weight of the lower part of the member likewise contributes to displace them, with respect to the direction of the limb, while it is also the principal cause of the rotatory derangement, in consequence of the point of the foot falling sometimes inwards; but, mostly outwards. The deformity, the shortening of the limb, the crepitus, the mobility of the fragments, the pain, and the impossibility, or difficulty, of moving the thigh, are the symptoms indicating the nature of the accident. There are two plans of treating fractured thighs; one, by laying the patient on the affected side, with his thigh and leg in a bent position; the other, by laying him on his back, with his limb in a straight or extended posture. In the first of these methods, a long splint, having upon it a thick soft pad, and the eighteen-tailed bandage, is to be put under the thigh, which is placed on its outside, upon

a pillow, and half bent upon the pelvis. This splint is to extend from the great trochanter to a little beyond the knee. The assistants, under the direction of the surgeon, are now to make the requisite degree of extension and counter-extension. While this is going on, the surgeon is to put the ends of the fracture into as perfect a state of coaptation as circumstances will allow. He is then to apply a piece of the emplastrum saponis, and lay down the tails of the bandage in a methodical manner. A pad and splint are now to be laid along the inside of the thigh, from the groin to the inner condyle; and, lastly, two more splints, with suitable pads, are to be placed, one along the front, the other along the back of the thigh. All these are to be firmly fastened with proper straps. The pillow is to be used for supporting the thigh in the above posture, and the leg is to be kept in a state of flexion, with a small pillow under the foot, to prevent the toes from inclining too much outwards. In the other mode of treatment, the patient is to be placed on a firm horse-hair mattress, a soft bed being detrimental in sinking and altering the patient's position. He is to lie on his back with his leg and thigh in a straight posture. The counter-extension is to be made by a strong assistant, who is to hold and fix the pelvis, while other

attendants make the extension at the ankle. When the fracture is transverse, two splints, furnished with proper pads, compresses, &c. and reaching along the side of the limb, from the pelvis to a little beyond the sole of the foot, will serve to prevent displacement, and keep the ends of the fracture steady, until they are firmly united. When, however, the fracture is oblique, or the neck of the bone is broken, the principle of continued extension becomes necessary. The most perfect apparatus for this purpose is undoubtedly that, which was invented by the great Desault. He saw, that, in oblique fractures of the thigh-bone, and in fractures of its neck, the difficulty of maintaining the reduction proceeded from the action of muscles drawing upwards the lower portion of the broken bone, while the upper fragment was propelled downwards by the weight of the body, which made the bed sink. He saw that every apparatus should operate, so as to prevent such descent of the pelvis and upper fragment, as well as the ascent of the lower one, while it should also have the power of preventing any rotation of the lower part of the limb. In short, he perceived that the grand thing to be aimed at, was some plan, in which the foot, leg, thigh, and pelvis, should form but one whole, the different parts

of which, though drawn in divers directions, would still preserve the same mutual relation to one another. Hence, he made it a rule to place all patients with broken thighs on hard beds, which would not sink under the weight of the trunk, so as to cause a descent of the pelvis and upper piece of the thigh-bone. Desault, with these objects in view, adopted the following mode: The whole limb was first covered with compresses wet with the saturnine lotion. Over these was applied an eighteen-tailed bandage. A splint, reaching from the crista of the os ilium to a little beyond the sole of the foot, was placed along the outer side of the limb. This first splint was rather more than two inches wide, and each of its ends was pierced in the shape of a mortise, and ended in a semicircular niche. A pad was put over the trochanter major, and another upon the upper and inner part of the thigh. The splint is then to be fastened in its place by means of two linen bands. The middle of one of these is to be applied over the compress at the upper and inner part of the thigh, and its ends are to be brought to the outside of the limb, passed through the mortise, and tied in a knot on the niche. The middle of the second band is to be applied, with the intervention of a pad, to the lower part of the leg, and

its ends are to be made to cross, first, upon the instep, and then upon the sole. Then they are to be conducted outwards, one being passed through the mortise, and tied with the other in a knot upon the niche, with sufficient force to pull the lower part of the femur downwards, and propel the splint upwards, and, of course, the upper piece of the broken bone and the pelvis. A second splint was next laid along the inside of the limb from the pelvis to some distance beyond the foot. A third splint was now applied, reaching from the abdomen to the knee. The upper ends of the external and front splints were fixed by a bandage, which went round the pelvis. The foot was kept from moving by a roller, the middle of which was applied to the sole, while the ends were made to cross upon the instep, and then were fastened to the splints.—Of the bent position, it may be alleged, that it does not procure so beneficial a relaxation of the muscles, as Pott and others have represented; and a strong objection to it, arises from the manner in which it leaves the knee, leg, and foot, unsupported and moveable. Such parts of the limb cannot be moved, without a most hurtful disturbance and displacement of the fracture being produced.

8. In fractures of the leg, both its bones are mostly broken together. Sometimes, however,

the accident only befals one, which is most frequently the fibula, which is slender, and liable to be fractured by a violent abduction of the foot, as well as by blows. In some instances, fractures of the leg happen higher up near the knee, where the thickness of the tibia is considerable, and where no particular displacement occurring, the injury may possibly be mistaken. But, in general, the weight of the foot drags and deranges the lower fragments, so as to deform the limb, while the nature of the case is rendered still more manifest by the mobility, crepitus, and pain. In England, the majority of surgeons reduce and treat fractures of the leg in a bent position, the patient being laid on his side. The counter-extension is made on the upper pieces of the broken bones, and the extension a little above the ankle, while the leg is lying on its outside, bent on the thigh, and the latter bent on the pelvis, to about an acute angle. A splint, furnished with a soft pad, an eighteen-tailed bandage, and proper straps, is then to be laid under the limb. Some emplastrum saponis is to be applied over the injury, and the tails of the bandage put down in a regular manner. The business is finished by putting on the upper pad and splint, to the pegs of which the straps, proceeding from the lower one, are to

be fastened. A pillow to support the knee, will generally be requisite, as well as another to keep up the foot, and hinder it from being turned too much outwards. However, if the splints are well made, and long enough, the foot will be rendered very steady by them. In France, it is objected to the bent position, that it does not relax all the muscles; that the posture is very apt to be altered by movements of the patient when asleep; that it creates painful pressure on the great trochanter and malleolus externus, over which processes, ulceration and sloughing are often induced. No one can deny, however, that the bent position relaxes the muscles of the calf, which are the most powerful in deranging and disturbing the fracture. The straight position is, perhaps, to be preferred, when there are sores or sloughs on the trochanter and lower part of the fibula. The splints ought to reach above the knee, and a little beyond the sole of the foot. Fractures of the tibia, or fibula, alone, are detected by tracing the most superficial parts of the bone with the fingers, and moving the foot about, which will often occasion a crepitus.

9. Fractures of the patella differ from most others, in being generally caused by a violent action of the extensor muscles of the leg, which rend the bone asunder. The upper frag-

ment is drawn more or less up the thigh; the patient loses the power of extending his leg, and, consequently, of walking; there is acute pain; and the fragments, and interspace between them, may be distinctly felt, at least, before a considerable swelling of the joint has come on. The first object in the treatment is to place the origins and insertions of the extensor muscles as near as possible to each other. This is done by laying the patient on his back, with the leg extended on the thigh, and the latter a little bent on the pelvis; which position is to be maintained by forming a gradually ascending surface, by means of pillows, from the buttock to the heel. The limb will lie more steadily in a fracture-box. The upper fragment is then to be pushed downwards, as near as possible to the lower one, and be kept from ascending again by a few turns of a roller immediately above it. The lower fragment cannot descend, as long as the leg is fixed in the extended posture; and, therefore, no bandage is necessary below this piece of the broken bone. The saturnine lotion should be applied to the knee.

10. Fractures of the olecranon are attended with a retraction of the detached fragment. The fore-arm is to be extended; the fragment pushed down, and kept there, with a roller,

while the arm is to be hindered from bending by laying a splint along it, in front of the elbow. When there is much swelling, both the latter cases demand topical and general bleeding, purging, &c.

11. Fractures of the ribs are generally attended with a pricking sensation in breathing; and the surgeon, on laying his hand upon the suspected place, and making the patient cough, may plainly feel a crepitus. Sometimes, the point of a broken rib wounds the surface of the lungs, and gives rise to emphysema, the symptoms and treatment of which have been already explained. The intercostal muscles prevent the ends of the fractures from being displaced. The chief thing in the treatment is to diminish the motion of the broken rib or ribs, by applying a tight roller round the chest, or, what is better, a broad, strong piece of cloth, which is to be laced in front. The latter will keep tight better than the roller, and may be slackened, or tightened, with the utmost ease, as the patient's feelings may require. Whatever is applied round the chest, a piece of the emplastrum saponis is to be put over the fracture, and the bandage is to be hindered from slipping downwards by tapes, which are to go across the shoulders, and be fastened to the roller, or cloth, both before and behind.

In order to guard against thoracic inflammation, it is usual to bleed patients with broken ribs immediately after the accident, unless great debility and old age forbid. Violent coughing must also be appeased by opiates.

12. Compound fractures of the limbs are highly dangerous cases, and such as often call for the exertion of the utmost surgical skill and judgment. The existence of a wound, which leads down to the fracture, makes a most material difference in the nature of the case. Without this breach in the soft parts, there is in general no severe degree of fever, no suppuration, no danger of gangrene; and under the observance of a proper position, and strict quietude, the bones, being kept steady in splints, unite very well at the end of a certain time. But, when the fracture has a wound leading down to it, the peril, difficulty of cure, and severity of the symptoms, are all much increased. Indeed, when the soft parts, besides being wounded, are dreadfully contused and torn, it is best to amputate at once. There are many instances, however, in which the most judicious and experienced surgeons feel embarrassed as to the proper line of conduct, whether the limb should be cut off at once, or an effort be made to save it. If amputation is to be done in the early stage of the case, it

must be performed immediately, before inflammatory symptoms and a gangrenous disposition have had time to extend themselves. When great swelling and inflammation have taken possession of the limb, and, particularly, when gangrene has commenced, the operation is too late, and the peril must be encountered. Were amputation performed under these circumstances, mortification would seize the stump, and the patient's death be only hastened. Therefore, when the amputation of a compound fracture is put off at first, the surgeon is, as it were, compelled to contend with such dangers as immediately follow. Should the patient escape these, or should he get over the inflammatory stage, the practitioner then acquires a second opportunity of amputating, if the circumstances of the case make it necessary, that is to say, if the aspect of the wound, and the profusion of the discharge, render it probable, that the patient's constitution will fall a sacrifice to a perseverance in the attempt to save the limb. When an effort is to be made to preserve the member, the fracture is to be reduced, and the limb laid on a splint, having on it a soft pad, and an eighteen-tailed bandage. A most important object is now to endeavour to make the wound heal by the first intention, by bringing its

edges carefully together with strips of sticking-plaster. Though entire success will not always follow this attempt, it seldom happens, that none of the wound will unite, though a part may suppurate. In proportion as the wound may be lessened, or united, by this means, so may the danger of a compound fracture be said to be diminished. Indeed, after the wound is healed, the case, in regard to danger, treatment, &c. is only to be considered as a simple fracture. Sometimes, when the end of the bone projects beyond the skin, a reduction cannot easily be effected, without dilating the wound. In other instances, when the projecting piece of bone is long, and the muscles act in a violent and spasmodic manner, it is recommended to saw off such portion of bone, since it could only be reduced by the exertion of such force, as might be attended with the most hurtful injury to the limb. In the inflammatory stage of compound fractures, a strict antiphlogistic treatment is proper, even bleeding being indicated when the patient is young, strong, and resident out of a large city. When suppuration has come on, evacuations must be left off, and bark, wine, cordials, fresh air, and a nourishing diet are indicated.

FUNGUS HÆMATODES.

Until late years this disease, in consequence of its insuperable and fatal malignity, has usually been confounded with cancer, from which, however, it is strikingly different, though not less dreadful. The fungus hæmatodes has most frequently been seen to attack the eyeball, the upper and lower extremities, the testicle, and the mamma. But, the uterus, ovary, liver, spleen, lungs, thyroid gland, hip and shoulder joints, have been the seat of the disease. A distemper, which presents itself in so many parts, must be subject to variety in its appearances.

1. When it attacks the eye, the first symptoms are observable in the posterior chamber. The pupil becomes dilated and immoveable, and, instead of having its natural deep black colour, it is of a dark amber, and sometimes of a greenish hue. The change of colour becomes gradually more and more remarkable, and, at length, is discovered to be occasioned by a solid substance, which proceeds from the bottom of the eye towards the cornea. The surface of this substance is generally rugged and unequal, and ramifications of the central artery of the retina may sometimes be seen running across it. The front surface of the new mass, at length, advances

as far forwards as the iris, and the amber, or brown appearance of the pupil, has, in this stage, been known to mislead surgeons into the supposition of there being a cataract, and make them actually attempt couching. The disease continuing to increase, the eyeball loses its natural figure, and assumes an irregular knobby appearance. The sclerotica also loses its white colour, and becomes of a dark blue, or livid hue. Sometimes, matter now collects between the tumor and the cornea. The latter membrane in time ulcerates, and the fungus shoots out. In a few instances, it makes its way through the sclerotica, and is then covered by the conjunctiva. The surface of the excrescence is irregular, often covered with coagulated blood, and bleeds profusely from slight causes. When the fungus is very large, the most prominent parts slough away, attended with a fetid sanious discharge. In the course of the disease, the absorbent glands, under the jaw, and about the parotid gland, become contaminated. On dissection, a diseased mass is found extending forwards from the entrance of the optic nerve, the vitreous, crystalline, and aqueous humors being absorbed. The retina is annihilated, and the choroid coat propelled forwards, or quite destroyed. The tumor seems to consist of a sort of medullary matter,

resembling brain. The optic nerve is thicker and harder than natural, of a brownish ash-colour, and destitute of its usual tubular appearance. In other cases, the nerve is split into two or more pieces, the interspaces being filled up with the morbid growth. Even the brain has been observed to share in the disease; sometimes dark-red spots appearing on the dura mater; sometimes small spots, containing a fluid like cream, being found between the pia mater and tunica arachnoides. When the lymphatic glands are enlarged, they are also found converted into a kind of medullary matter, similar to that which composes the diseased mass in the eyeball. When the skin bursts over a diseased absorbent gland, a sloughy ulcer is produced; but, no fungus is emitted, unless the affection of the gland with fungus hæmatodes be primary. Fungus hæmatodes of the eye has been erroneously regarded as cancer by the best writers. We learn from Bichat, that two thirds of the patients on whom Desault operated for *supposed* carcinoma of the eye, were under twelve years of age. Twenty, out of twenty-four cases of fungus hæmatodes of the eye, with which Mr. Wardrop has been acquainted, happened to children under twelve years of age. Now, as cancer is rather a disease of aged, than young persons, and we

find, from Mr. Wardrop, that fungus hæmatodes of the eye mostly affects persons under twelve years of age, it is tolerably certain, that most of Desault's cases, reported to be cancers of the eye, were in fact the equally terrible malady now engaging our consideration. The sight of young subjects is generally destroyed, before the attention of parents is excited to the distemper. Frequently, however, a blow, followed by ophthalmy, precedes the growth of the diseased mass. When no external violence has occurred, the first symptom is a trivial fulness of the vessels of the conjunctiva, the iris becoming, at the same time, extremely vascular, and altered in colour, and the pupil dilated and immoveable. There is seldom much complaint made of pain; but, the child is sometimes observed to be languid and feverish. In adults, the fungus hæmatodes of the eye generally comes on without any apparent cause, though sometimes in consequence of a blow. At first, the tunica conjunctiva is slightly reddened, and vision indistinct. The redness and obscurity of sight increase slowly, and an agonizing nocturnal headach is experienced, the eye bursts, and the humors are discharged.

With regard to the cure of the fungus hæmatodes of the eye, the only chance of effecting this desirable object depends upon the early

extirpation of the diseased organ. It must be acknowledged, however, that most of the operations, in which the morbid eye has been removed, have hitherto proved unsuccessful, owing to a recurrence of the disease. The reason of such ill success may be imputed to the optic nerve being almost always in a morbid state, before an attempt is made to remove the eye. The operation has always been found to fail, when the disease is advanced so far, that the posterior chamber is filled by the fungous mass. Since no internal medicines, nor external applications, afford the least hope of checking any form of the fungus hæmatodes, it is manifest, that, when the distemper of the eye exceeds certain bounds, the miserable patient is placed beyond the reach of any effectual aid from surgery. Most of the foregoing particulars have lately been detailed by Mr. Wardrop, of Edinburgh.

2. Fungus hæmatodes generally begins on the limbs, in the form of a small colourless tumor, which is softish, except when covered by any fascia. While confined to the adipose and cellular substance, covering the muscles, the distemper is, in its early stage, not very painful. But, when it occupies a deeper part of the limb, a sense of pain and weakness is experienced. The pain, at length, becomes

incessant and of a darting kind. For a considerable time, the tumor is smooth and even; but, afterwards, it projects irregularly at one, or more points. Here the skin feels thinner than elsewhere, yielding to pressure; but, instantly rising up again when such pressure is removed. One part of the tumor often feels, as if it contained fluid; while another is exceedingly hard. In time, one or more openings in the skin are produced, and through these the fungous mass is protruded, and increases in size with astonishing rapidity, though, before the skin ulcerates, the growth of the tumor is in general slow. The fungus is usually of a round form, and has an unequal surface, often covered with clots of blood. It is of a dark-red colour, is easily torn, and bleeds on being touched. Its neck is generally narrow, and its body spreads out over the edge of the ulcerated skin. When the fungus is very large, parts slough away. Sometimes, the absorbent glands become contaminated while the swelling is small; sometimes, not before ulceration happens. Upon dissection, the tumor is found to consist of a medullary substance much resembling brain, intersected by thin membranes, and often containing cavities filled with a thin bloody matter. In the adipose membrane, numerous pouches, distended by the fungus,

frequently exist. When the lymphatic glands are affected, they become changed into a brain-like substance. No medicines, nor external applications, have the power of arresting the progress of the fungus hæmatodes upon the extremities. Above all things, the surgeon should refrain from being led to puncture the tumor by the feel of a fluctuation. While the skin remains whole, the advance of the distemper is generally slow. No sooner is there an opening in the integuments, than the fungous mass projects, rapidly acquires a frightful magnitude, and quickly destroys the patient. The growth of such a fungus often cannot be repressed by the most powerful caustics, and can never be effectually extirpated by them. It may be looked upon as an invariable truth in surgery, that irritating any malignant disease, without completely annihilating it, inevitably exasperates it, and hastens the patient's death. This is undoubtedly true in respect to the fungus hæmatodes, wherever situated. Immediately the existence of the disease is known, the whole of the morbid mass, and parts in its vicinity, should be cut away. Perhaps, the numerous relapses, which have happened, are imputable to the incisions not having been made sufficiently distant from every part of the diseased mass. So great, indeed, has

been the ill success of attempts to cure the disease by cutting it away, that some give a preference to amputating the limb at once. We deem the following views of the matter most prudent and rational. First; that if an attempt be made to cut away the tumor, and save the limb, the surgeon must be careful to remove, at the same time, a considerable quantity of the soft parts in the circumference of the swelling. Secondly; that the earlier this is done, the more likely is it to succeed. Thirdly; that, after the tumor is taken out, an attentive examination of the surface of the wound should be made, and every suspicious part, or fibre, be cut away. Fourthly; that, should the disease still recur, amputation ought to be instantly performed. Fifthly; that caustics should never be applied to this disease. Sixthly; that, even when one of these operations effectually extirpates the distemper of the limb, the patient's entire recovery is always rendered exceedingly uncertain, by reason of the viscera, and other invisible parts, being frequently affected, at the time of the operation, with the same sort of disease.

3. Fungus hæmatodes of the testicle sometimes begins in its glandular part, sometimes in the epididymis. Its progress is slow, and the pain generally not severe. Nor is there,

at first, any inequality, or hardness, of the diseased part, nor change in the scrotum. When the testicle has become exceedingly large, it feels remarkably soft and elastic, as if it contained a fluid. Hence, the case has often been mistaken for an hydrocele, and punctured with a trocar. Occasionally, when the tumor is large, it is in some places hard, in others soft. The hydrocele may be known by the water beginning to collect at the bottom of the scrotum, and then ascending towards the spermatic cord, and by the swelling being circumscribed towards the abdominal ring; whereas the fungus hæmatodes begins with a gradual enlargement of the testicle itself, followed by a fulness, which extends up the spermatic cord. As the disease advances, abscesses form, and the scrotum ulcerates; but no fungus shoots out. When the inguinal glands become contaminated, they often acquire an immense size; and, when the skin over them bursts, large portions of them slough away. Fungus hæmatodes of the testicle is said to afflict young subjects more frequently than old ones. On dissection, the substance of the diseased testicle is found to present a medullary, or pulpy appearance, generally of a pale brownish colour, though sometimes red. In most cases, the tunica va-

ginalis and tunica albuginea are adherent together; occasionally, there is fluid between them. The only chance of a cure must be derived from a very early performance of castration, before the disease has extended to the inguinal glands, or far up the spermatic cord.

4. We shall quit this subject with stating some of the principal differences between two diseases, which have been commonly confounded. A scirrhous tumor is, from its commencement, hard, firm, and incompressible, and is composed of two substances: one hardened and fibrous, the other soft and inorganic. The fibrous matter is the most abundant, consisting of septa, which are paler than the soft substance between them. A scirrhous tumor, situated in a gland, is not capable of being separated from the latter part, so much are the two structures blended. A scirrhus, in another situation, sometimes condenses the surrounding cellular substance, so as to form a kind of capsule, and assume a circumscribed appearance. When a scirrhous swelling ulcerates, a thin ichor is discharged, and a good deal of the hard fibrous substance is destroyed by the ulceration; other parts become affected, and the patient dies from the increased ravages of the disease, and its irritation on the constitution. Sometimes, though not always, after

a scirrhus has ulcerated, it emits a fungus of a very hard texture. Such excrescence, however, is itself at last destroyed by the ulceration. Cancerous sores, also, frequently put on, for a short time, an appearance in some places of cicatrization. On the other hand, the fungus hæmatodes, while of moderate size, is a soft elastic swelling, with an equal surface, and a deceitful feel of fluctuation. It is, in general, quite circumscribed, being included within a capsule. The substance of the tumor, instead of being for the most part hard, consists of a soft, pulpy, medullary matter, which readily mixes with water. When ulceration occurs, the tumor is not lessened by this process, as in scirrhus; but a fungus is emitted, and the whole swelling grows with increased rapidity. Cancerous diseases are mostly met with in persons of advanced age, while fungus hæmatodes generally afflicts young subjects.—*(Wardrop.)*

GANGLION.

SYMPTOMS.

A GANGLION is a kind of encysted tumor, which forms in or over the sheath of a tendon. It commonly occurs upon the wrist, in the

track of the extensor tendons of the hand and fingers; (though sometimes on the foot, nape of the neck, &c.) Ganglions are at first scarcely perceptible; they enlarge gradually; and attain the size of a filbert, walnut, or small egg. In proportion as they increase in magnitude, the motions of the part, into which the tendon is inserted, become interrupted. The tumor is neither attended with heat, pain, nor redness. Upon holding a light behind the swelling, it will be found to be transparent. Although very tense, an examination with the fingers may ascertain the presence of a fluid. The tumor is more or less moveable under the skin, especially when pushed in the direction of the tendon, in the sheath of which it happens to be formed. On dissecting a ganglion, it appears to consist of a thin cyst, filled with a transparent fluid, the viscidity of which sometimes equals that of white of egg. Celsus, with much reason, classed ganglions with encysted tumors; indeed, they bear a great resemblance to the meliceris; the chief difference being their lying within the sheath of a tendon, or very near it; for, in reality, their situation is often on the outside of it.

CAUSES.

Ganglions generally originate from unknown causes. Sometimes, however, they are the consequence of a sprain, excessive fatigue of parts, &c.

TREATMENT.

1. The surgeon may try to disperse ganglions by binding a piece of lead upon them, and rubbing them every day with the linimentum saponis, or oleum origani. This plan of treatment is the most common, and generally answers.

2. Meekner advised the patient's hand to be laid upon a table, and the swelling then to be forcibly struck with the fist. In this way, the cyst is ruptured, the fluid is effused into the sheath of the tendon, the tumor subsides, and a short employment of a liniment and bandage soon brings about the absorption of the extravasated contents of the swelling. Instead of actually striking a ganglion, a plan, which might appear uncouth to many, we should prefer compressing the swelling with both thumbs, so as to rupture the cyst.

3. Instances are sometimes met with, in which all attempts to disperse a ganglion prove ineffectual. When this is the case, and the parts become disabled from the size and situa-

tion of the swelling, the surgeon is justified in extirpating the disease with a knife. The chief things to be observed are, to cut out the cyst entire, without wounding it, or leaving any particle of it behind; to bring the edges of the wound together with sticking-plaster; and to apply a compress and roller over the dressings.

GANGRENE.

By gangrene, or mortification, surgeons always mean the death of a part of the body; or the conversion of such part into a black, fetid, cold, insensible mass, with which the general, nervous, and vascular systems no longer have any organic connexion. The varieties of mortification are as numerous as the causes of the disorder. It follows inflammation, attended with violence, or weakness. It may proceed from a gradual decay of the vital powers induced by old age; it may be the effect of the supply of blood to parts being cut off; or of the return of such fluid towards the heart being stopped; it may arise from an excessive contusion, or concussion; it may depend upon deleterious internal causes; the application of caustic, or of great degrees of heat or cold to parts.

1. The gangrene, which is produced by the action of caustic, or fire, is always attended with an actual decomposition of the flesh. Sometimes, indeed, as we have explained in treating of burns, the caloric, which is applied, being below a certain degree, does not directly kill and decompose the part, does not immediately occasion a slough; but excites such inflammation, as afterwards terminates in this sort of mischief. Having spoken of burns, it becomes unnecessary to dwell upon them any more here.

2. The abstraction of caloric is not less pernicious than the application of too high degrees of it. These very opposite causes, in fact, are observed to give rise to effects, which much resemble each other. Exposure to cold, like the application of heat, may excite different degrees of injury, from a slight inflammation of a part, to the death of the whole body. When the cold does not exceed a certain intensity, such complaints as inflamed, or ulcerated chilblains, are produced. When the cold, to which parts have been exposed, is greater, gangrene is apt to be excited. Lastly, when the whole body is subjected to the destructive influence of excessive cold, a sense of lassitude overwhelms the system, a danger-

ous propensity to sleep comes on, the action of the vessels gradually ceases, and all the vital functions being suspended, all the fluids at length become thoroughly frozen. When the animal functions are suspended by cold, the only chance which the patient has of reviving, depends upon his not being suddenly brought near a fire, or into a warm situation. On the contrary, the body should at first be kept in a cold place; frictions should be made on the chest, and then on the limbs. After a time, some wine may be injected down the œsophagus, through a hollow bougie, and the body may be laid between blankets, in a chamber where there is no fire. The same principles apply to the treatment of frozen parts, as to that of a person whose vital actions are suspended by cold. When frozen parts are suddenly exposed to much warmth, violent inflammation and gangrene are almost sure to ensue. The proper treatment is to let the congealed fluids thaw very slowly; to rub the parts with snow, or ice-cold water; and, above all things, to keep them away from the fire.

3. Gangrene is often a consequence of violent inflammation. Here the disorder is to be prevented by bleeding, evacuations, and ordinary antiphlogistic means. Gangrene is to

be particularly apprehended in cases, where the cause, which is productive of the inflammation, excites by its presence a continual increasing irritation. Thus it is brought on, when urine is extravasated in the cellular membrane. Hence, it is always a principal indication to remove the cause, if possible, before having recourse to antiphlogistic remedies. Although bleeding and evacuations are proper, while the gangrene is surrounded by much inflammation, and attended with a strong, frequent pulse, the practitioner should be aware, that, whenever a considerable portion of the body sloughs, a great and sudden prostration of the vital powers of the whole constitution immediately ensues. Then bark, wine, cordials, opium, a generous diet, &c. are urgently indicated. Therefore, the evacuations, in the early stage, must not be pushed too far, lest the patient fall a victim to debility.

4. A violent contusion inevitably produces gangrene, by subverting the organization of the injured parts. This we shall find to happen in cases of contused wounds.

5. A vehement concussion of a part may throw it into a totally senseless state, and induce gangrene, as sometimes is exemplified in injuries of the limbs by cannon-balls.

6. Gangrene seems sometimes to depend

upon the action of internal deleterious causes. To this head, the mortifications of the toes, induced by eating bread made of bad rye, have been imputed. Richerand also refers the sloughing which accompanies pestilential buboes, to the action of an internal deleterious cause, which expends its hurtful activity by being determined to the parts which are rendered gangrenous.

7. Gangrene from weakness is the result of inflammations, where the power is not equal to the increased action in the part affected. Such mortification is not only attendant on every inflammation essentially gangrenous, like the anthrax and malignant pustules; but may attend all inflammations joined with excessive debility. The ravages of this species of gangrene can only be checked by the exhibition of tonics, cordials, &c. Here may be noticed a kind of mortification, which is attended with extreme weakness, and attacks the integuments covering the sacrum, in patients, who have long been confined in bed on their backs by fevers, bad fractures, &c. The constant pressure on such parts of the skin, obstructs the circulation through it, just at a period, when the flow of the blood is already seriously checked by the existing debility. The sloughing commences at the point where the pressure

is greatest, and thence extends more or less widely. Some cases are met with, in which the skin is so extensively destroyed, that, upon the separation of the sloughs, the sacrum and neighbouring bones are denuded, and are seen at the bottom of an ulcer, the discharge and irritation of which are terrible. Patients sometimes escape fever, bad fractures, &c. and ultimately fall a sacrifice to this secondary disease. The treatment consists in obviating the pressure on the diseased parts, by change of posture, and the suitable application of pillows under the patient. Some apply to the parts, lint, dipped in camphorated spirits of wine; others, emollient poultices, till the sore loses its unhealthy appearance. Bark, wine, and a generous diet, must at the same time be directed.

8. The gangrene from old age, resembles that from weakness, inasmuch as it originates from a decay of the vital powers, and requires the administration of tonics. It differs, however, in being often only preceded by a burning pain in the part, which undergoes no swelling, and is sometimes of a pale red, or livid colour. It constantly attacks parts at the greatest distance from the source of the circulation, and, hence, frequently begins in the toes, and sooner or later passes on to the foot

and ankle, and sometimes to a part of the leg. In a few instances, it makes its appearance with little or no pain; but, in most cases, the patient feels great uneasiness through the whole foot and ankle-joint, particularly in the night, even before these parts show any mark of distemper, or any thing else than a small discoloured spot on the end of one of the little toes. If the patient has lately cut his nails, or corns, it is frequently, though very unjustly, set to the account of such operation. Each sex is liable to it, though it is far the most frequent in men. It is more common among the rich and voluptuous, than the labouring poor; and oftener attacks great eaters, than free drinkers. It frequently afflicts persons advanced in life; but is not confined to old age. Pott could not discern, that it was peculiar to any one kind of constitution; though he thought that it most frequently attacked persons, who had suffered flying, gouty, pains in their feet. This case is remarkable on account of the inefficacy of bark in its treatment, the free internal exhibition of opium being the grand thing to be depended upon. The best local application is a soft, smooth, unirritating poultice.

9. Some writers impute one species of mortification to a morbid dilatation of the left

ventricle of the heart, (*Richerand*,) and ossifications of the arteries.

10. The general symptoms of mortification are, absolute insensibility of the part, an alteration of its colour, a diminution of its temperature, and a particular fetor, which exhales from it. The gangrenous parts may be cut, without the patient being put to any pain. Their colour, which is at first livid, soon changes to a dark brown or black. However, the mortification of parts is more strongly indicated by their shrivelling up, than by the alteration of their colour. Air is often formed in parts, which are affected with mortification; and, of course, they have an emphysematous feel. *Gangrene* has sometimes been restricted to incipient, or superficial mortifications, and *sphacelus* applied to cases, in which the dead parts are considerable, and turned into a black, senseless mass. This distinction, like that of *dry* and *humid* gangrenes, is now nearly quite rejected, as unpractical and scholastic. Though a slough may be scratched, or cut, without pain or harm to the patient, it cannot be pulled away immediately after its formation, without pain, hemorrhage, and an increase of sloughing being produced. The dead part is still adherent to the living ones, and cannot prudently be taken away, before

the absorbents have removed the matter which forms the uniting medium.

11. With respect to the general internal treatment of mortification, it may be observed, that, although in the early stage of a few cases, depending on violent inflammation, a moderate employment of antiphlogistic remedies may be useful, yet, in general, the distemper is attended with great prostration of all the vital powers, and, consequently, demands a tonic plan of treatment. Bark, wine, porter, cordials, a generous diet, and plenty of fresh air, are in general urgently required, with opiates according to circumstances.

12. As for the general local treatment, the removal of any external pressure, or irritation, is always highly necessary. The applications may be common linseed poultices, to which powdered charcoal is sometimes added, or the fermenting cataplasm, made of oatmeal, beer, and yeast. Much stress has absurdly been laid on the topical use of antiseptics, and tonics. Of the former, several strong stimulants, like oil of turpentine, alcohol, &c. have been used; of the latter, bark, in a variety of shapes, has been resorted to. It matters not what is put on such parts, as are actually dead. But, it is of high importance, that the living flesh, around and underneath a slough, be not in-

jured, and irritated by any sort of applications. It is idle and vain to talk of reanimating the parts with spirits, balsams, &c. to prevent them from being affected with mortification. It is equally absurd, to think of hindering them from falling into a state of putridity by antiseptics. Therefore, the most enlightened surgeons generally consider soft emollient poultices as good an application as can be used; though, since the charcoal and ordinary fermenting poultice, are not materially stimulating, not much objection can be made to their employment. Making incisions and scarifications into gangrenous parts can do no good, if they are merely made into the sloughs; and, if they extend through the dead to the living flesh, they are not only likely to effect no rational purpose, but, must be productive of pain, hemorrhage, and frequently of fresh sloughing. However, when a slough is large, and a part of it is loose, the cutting away of such portion is commendable on the principle of lessening the fetor. Were also much sanies to lodge under a slough, a careful incision through the dead part might be useful in affording an exit to the matter. This proceeding, however, can rarely be right or necessary, and can be justified on no principle whatsoever,

when the living parts are to be at all irritated, or wounded.

13. An important caution remains to be given, which is, never to perform amputation, in cases of gangrene, before the spreading of the mortification has manifestly stopped, and a line of separation can be discerned, between the dead and living parts. Were this rule neglected, the stump would often become gangrenous soon after the operation, and the patient's death be accelerated.

14. In a few instances, amputation may be deferred longer than the period when the sphacelation of a limb has ceased to spread, and the red line on the living edge denotes the commencement of the separation. This happens, when patients are so reduced, that they are likely to die under the operation. The dead parts separate from the living ones down to the bone, which alone connects the putrid mass with the rest of the body. The discharge being moderate, such patients, with the aid of a nourishing diet, bark, cordials, wine, &c. will often soon recover a degree of strength, which greatly qualifies them for bearing the amputation. If no operation were performed, the connexion by the bone would in time be destroyed by the process of exfoliation, and the ulcer, perhaps, even heal. But, the produc-

tion of a sound and serviceable stump generally renders the operation necessary.

15. Although amputation cannot be done, after a gangrene has begun, and while it is spreading, yet, such operation ought frequently to be performed, before the mortification has had time to begin at all. Many bad gunshot injuries, lacerated wounds, and compound fractures, will inevitably bring on mortification, or, at least, will do so, in nine cases out of ten. Here, amputation should be done immediately after the accident, the wound of the operation being less dangerous, than an extensive sphacelus.

GONORRHŒA.

SYMPTOMS.

THIS complaint consists of the discharge of a fluid, like pus, from the urethra, attended with pain, difficulty, and scalding in making water. The stream of the urine, in the inflammatory stage of the disease, is generally much diminished, owing to the manner in which the urethra is made, by the pain of the evacuation, to become preternaturally contracted. There is a frequent propensity to make water, and,

very often, the urine can only escape by drops. At first, the disease is accompanied with an itching about the mouth of the urethra, and a fulness and redness of the glans penis. The itching sensation soon changes into soreness and pain, followed by a feeling of scalding when the urine is passing through the passage. The matter, which is at first discharged, is small in quantity, and almost colourless; but, it quickly becomes more or less copious, and of a deep yellow or greenish colour, sometimes tinged with red globules. In the generality of cases, the inflammation does not reach more than about an inch and a half down the urethra, from its orifice in the glans penis. In irritable habits, and violent examples, the inflammation and irritation pervade the whole course of the urethra, attended with excessive irritability of the bladder; pain about the loins, hips, perineum, and buttocks; swellings and suppurations of the mucous glands of the urethra, especially, of those called Cowper's glands; retention of urine, &c. Sometimes, the irritation in the urethra, induces an inflammatory enlargement of the testicles, and inguinal glands, which last affection is well known under the name of a sympathetic bubo. Occasionally, painful erections, attended with a

bent state of the penis, termed chordee, afflict the patient.

CAUSES.

These are all referrible to an infectious matter being applied to the urethra in the act of copulation. The virus of gonorrhœa was supposed, by Hunter, to be identically the same as the poison of lues venerea, and, therefore, capable, by absorption, of bringing on really syphilitic buboes, sore throats, nodes, &c.; or, when inserted into a wound of the skin, capable of exciting a true chancre. Mr. Hunter did not maintain, that such consequences usually resulted from a gonorrhœa; but, he inculcated the possibility of them, and the prudence of giving mercury in the treatment of the complaint. On the other hand, the generality of present practitioners disbelieve the identity of the two poisons, and the power of the gonorrheal virus ever to occasion a chancre, or any syphilitic complaints from absorption. Of course, they look upon the exhibition of mercury as useless and improper. B. Bell relates experiments, proving that inoculation with the matter of gonorrhœa cannot excite a chancre, or venereal symptoms. However, Hunter has brought forward facts, from which he drew opposite conclusions.

TREATMENT.

1. The first stage of gonorrhœa is clearly of an inflammatory nature. Wrapping the penis up in linen, wet with the saturnine lotion, using a weak injection of the same quality, keeping the bowels open, and giving a grain of opium at night, seem proper measures.

2. When sympathetic buboes occur, leeches and the saturnine lotion ought to be applied to them. When retention of urine comes on, the warm bath, and opiate glysters, are strongly indicated. When chordee and painful erections happen, opium and camphor are the medicines, from which relief is to be sought.

3. After about a week, when the first inflammatory stage begins to abate a little, the saturnine injection may be changed for one containing the zincum vitriolatum, in the proportion of about six grains to four ounces of water. This may be used thrice a day.

4. In the latter stage of gonorrhœa, when the discharge from the urethra is almost the only complaint, the strength of the preceding injection may be increased, or one made by dissolving a grain of the hydrargyrus muriatus in six ounces of distilled water may be employed. Twenty, or thirty drops of the balsam. copaib. may also be given, two or three times a day.

5. Whatever mode of treatment is pursued, the gonorrhœa is a disease, which will run its course, and last, at least, a certain time. However, there is no doubt, that, by appeasing the violence of the symptoms, the complaint may be rendered milder, and often have its duration made shorter, than would otherwise be the case. When the discharge has totally disappeared, the use of the injection must be continued a week or ten days, in order to prevent a relapse.

6. When the discharge becomes thin, lasts a considerable time, and is unattended with pain and scalding in making water, it is called a *gleet*. This was suspected by Hunter not to be infectious. Gleets are often exceedingly difficult of cure. The methods in the greatest repute are, the cold bath, sea-bathing, bark, and steel medicines, change of air, astringent and stimulating injections, the wearing of bougies, the exhibition of the balsam. copaibæ, &c.

GUTTA SERENA.

SYMPTOMS.

The gutta serena, or amaurosis, is an impairment, or abolition of sight, depending upon a

torpid and insensible state of the optic nerve and retina. When the patient is first attacked by the gutta serena, his sight grows gradually weaker. He feels as if a cobweb were drawn over his eyes, and imagines, that he sees, on a white surface, black specks, which he endeavours to wipe away. The pupil of the eye gradually loses its brilliancy, and becomes dilated much beyond the natural size. If the eye be shut, and then suddenly opened, and exposed to the light, the pupil will contract very little, or even not at all. The sight grows weaker and weaker; and spectacles are no longer of any service: it is remarkable, that, in general, the patient can discern objects rather better, in a moderate, than a vivid light. In this stage, the disease is called the *imperfect gutta serena.* If remedies are not immediately applied, the sight becomes considerably worse; the patient soon loses the faculty of distinguishing the difference between light and darkness; and the disorder is then the *perfect gutta serena.* Although this last is generally a gradual disease, there are cases, in which it comes on at once, without being preceded by any of the foregoing circumstances. Schmucker has often seen such examples, and has invariably found them more easy of cure, than when the disease has been more gradual. In these sudden cases, the

sight is totally lost, and the pupil of the eye is uncommonly dilated, and quite motionless. A lighted candle may even be placed just before the eye, without exciting sensation. The pupil now loses its shining black gloss, and grows pale, exhibiting a peculiar appearance, which is well known among all who are conversant with the present disease. Although the gutta serena is generally attended with dilatation of the pupil, and a more or less immoveable state of the iris, this is not constantly the case, instances every now and then presenting themselves, in which the iris moves with considerable activity, while the pupil is not at all larger than that of a sound eye. Occasionally the eyelids are affected with paralysis.

GAUSES.

These are numerous, and of very various kinds. The following are the principal, which are enumerated by authors, who are most looked up to for information on the subject: 1. A strong determination of blood to the head, brought on by the stoppage of an habitual discharge from piles, an interruption of the menses, or violont exercise and hard labour. 2. Severe headachs. 3. A quick and sudden impulse of the rays of light upon the retina. Many instances are on record of persons being

struck blind in looking at lightning. 4. Pregnancy is said occasionally to operate as a cause, the blindness lasting till after delivery. Schmucker states, that he has seen this fact three times. 5. Straining the eyes by study, reading and writing at night, and, particularly, by using magnifying glasses. Many distinguished naturalists have thus been known to lose their sight. 6. Violent anger, fright, and paralytic strokes. 7. A preternatural dryness of the Schneiderian membrane of the nose. 8. Tumors in the orbit, or in its vicinity. 9. Violent internal inflammations of the eye. 10. Considerable concussions of the brain: here the disease often goes away of itself in the course of time, and much benefit is said to be derived from applying cold washes to the head. 11. Any great degree of pressure on the brain, whether proceeding from a depressed fracture of the skull, or a collection of blood, or matter under the bone. This sort of gutta serena generally goes off, after its cause has been removed. 12. A dilated state of the branches of the internal carotid, which form the circulus arteriosus at the side of the sella turcica. The anterior portion of the circulus arteriosus lies just over the optic nerve, which it may compress. 13. A disordered state of the stomach and organs connected with it, which, according to

Richter and Scarpa, is a most common cause. 14. Blows on the eyebrow, and injuries of the supra-orbitary nerve.

TREATMENT.

1. The imperfect and perfect gutta serena being only different gradations of the same disease, they require similar remedies. The former case is generally much more easily cured, than the latter, except when this has come on in an exceedingly sudden manner, or from a violent agitation of the blood.

2. When the disease appears to arise from a full habit, or from a great determination of blood to the head, ten or twelve ounces of this fluid should be taken from the arm, and leeches applied to the temples. Such evacuation is to be repeated three or four times, or oftener, as circumstances may require. The patient is also to be purged with small doses of Epsom or Glauber's salt. After a few days, a blister may be put on the nape of the neck, or temples, and be kept open for ten days, or a fortnight, with the savine ointment. Then small repeated doses of emetic tartar may be administered. Three grains may be dissolved in six ounces of water, and, after emptying the bowels with the purgative salts, a spoonful of the mixture is to be given every two hours in the forenoon. This method usually brings

on sickness, and sometimes also purging at the same time, in which event the doses must be lessened. Emetic tartar may be exhibited in Schmucker's celebrated resolvent pills, if the surgeon thinks fit. ℞. Gum. galb. Sagapen. Sap. Venet. āā. ʒj.; Rhei optimi ʒjſs.; Tart. emet. gr. xvj.; Suc. liquirit. ʒj. Fiant pil. pond. gr. j. Schmucker gives fifteen of these pills, every morning and evening, for a month or six weeks. From this great surgeon we learn, that when his patient is of a full habit, and is attacked with a gutta serena, in consequence of violent bodily irritation, a cure is speedily effected by means of bleeding, leeches, and emetic tartar.

3. The imperfect gutta serena, originating from some disorder or irritation in the stomach and gastric organs, is also in general curable by first exhibiting emetics of the antimonium tartarizatum, and then keeping the bowels open for a few days, with small repeated doses of the same medicine. The above resolvent pills are next to be given. When the sight begins to be improved, the tone of the digestive organs is to be meliorated with bark and valerian, and the nerves of the eye roused, by holding, for about half an hour, the aqua ammoniæ puræ near enough to this organ, for it to be stimulated by the vapour. In conjunction

with this plan, blisters may be put on the nape of the neck; the eyebrow be rubbed with a liniment; a snuff, composed of turbith mineral gr. ij. and powdered betony ℈j. be applied to the nostrils; and electricity tried.

4. The imperfect gutta serena, proceeding from violent anger, is said, by Richter, Scarpa, and Schmucker, to be generally curable by bleeding and emetic tartar.

5. Cases, arising from grief or fright, may be cured by tartar emetic and the resolvent pills, followed by doses of bark and valerian.

6. Cases, originating from nervous debility, intense study by candlelight, straining the eye, &c. are often curable, by first purging the patient gently with rhubarb, and afterwards giving tonic, cordial medicines, such as bark, valerian, the infusion of quassia, and vitriolic æther. Spirituous vapours are also to be applied to the eye. A nourishing diet, a salubrious air, proper exercise, and avoiding every thing which disturbs the mind, or strains the eye, are also essentially proper.

7. The use of snuff, made of ten grains of turbith mineral, mixed with a dram of common sugar, is much praised by Ware, for its efficacy in some cases of gutta serena.

8. Electricity has been highly recommended by Hey for the relief of the disease; and, with

calomel, and other aperient and resolvent medicines, it is undoubtedly deserving of considerable repute. When gutta serena is attended with a contraction of the pupil, has been preceded by severe pains, or is the effect of lightning, electricity is often highly efficacious.

9. Many cases of gutta serena are incurable. Of this kind are those which depend on an exostosis in the orbit, an alteration in the structure of the retina, hydrophthalmia, tumors within the cranium, &c. The recovery of many examples will depend almost entirely on the removal of their particular causes.

HARE-LIP.

A FISSURE in the lips is not an unfrequent congenital deformity, and is well known by the appellation of a hare-lip. The cleft is almost always situated in the upper lip, and generally about its central part, though occasionally near one of the commissures. Its margins are separated by the action of the muscles, and are covered by a delicate reddish skin, like what is naturally seen upon the red part of the lips. This is the most simple form of the hare-lip. But, the fissure may be double; the bones forming the roof of the mouth may be imperfect; the middle incisor teeth may project

forwards; and the case may be complicated still further by the alveolary process jutting out. Besides the deformity occasioned by a hare-lip, pronunciation and mastication suffer impediment in proportion to the length of the fissure. When the cleft does not extend far from the edge of the lip, and does not affect the whole breadth of the part, the effect is much less remarkable, than when the fissure reaches into the nostrils, or, in addition to being double, is complicated with a projection of the incisor teeth, and a deficiency in the palate. This last imperfection may render deglutition difficult, by letting the food, particularly liquids, readily escape from the mouth into the cavity of the nose. Such an accident, however, is prevented when the septum nasi happens to be situated immediately over the cleft in the roof of the mouth. The hare-lip does not hinder new-born children from embracing the mother's nipple with their mouths, and sucking; and hence the operation may be dispensed with during the first year of an infant's existence. The ease with which the sutures cut their way out; the impropriety of keeping the child, for two or three days, away from the breast; and its tendency to cry too much, are received as reasons for the common maxim of not undertaking the operation before

the little patient is two years old. Beyond this period, the operation ought not to be postponed; for the young fibres are now capable of uniting with the utmost facility, and, in so perfect a manner, that scarcely any vestiges of the deformity remain; a degree of success which can rarely be attained, when the operation is not attempted till a later period.

TREATMENT.

1. In order to cure the hare-lip, it is necessary to convert the edges of the fissure into fresh-cut bleeding surfaces, which are to be brought together, and kept in contact a sufficient length of time for nature to effect their agglutination.

2. A chief object, therefore, in the operation, is to make the wound form two straight lines, of equal length, which will admit of being placed in contact, without leaving one side of the lip lower than the other.

3. The callous edges of the fissure are to be pared off, first on one side, by putting a piece of pasteboard under the lip, which is to be stretched out, and held upon it with the surgeon's index finger and thumb, while, with a scalpel in his other hand, he cuts off the requisite portion by an even straight incision. The opposite portion of the lip is to be fixed

in a similar manner, and have its callous margin completely pared off by another regular stroke of the knife. The two incisions are to meet accurately above, and be perfectly straight, so that the wound may be compared, in shape, with the letter V inverted.

4. The edges of the cleft having thus been converted into bleeding surfaces, the opposite sides of the wound are to be brought into contact with each other.

5. The maintenance of them in this position, until they have grown together, is the next indication. This is fulfilled, by passing two pins, constructed for the purpose, through the sides of the wound. The pin nearest the red part of the lip is to be first introduced, while the greatest care is taken, that the two portions of the lip accurately correspond, and meet each other, without the appearance of the least deformity. The pin is to be pushed in abont one-twelfth of an inch from the bleeding surface, and is to pass obliquely about two-thirds of the way through the thickness of the lip. Its point is then to enter the fresh-cut surface of the other side at the same depth, and be brought out about one-twelfth of an inch from the line of the wound. The second pin is then to be introduced in a similar manner. A bit of silk, rubbed with

white wax, is now to be twisted round the ends of the pins, in various directions, so as to cover as much of the wound as possible, and assist in keeping the outer part of it closed. This is well known under the name of the *twisted suture*. Little compresses are to be put between the cheeks and ends of the pins; a compress is to be laid over each cheek; and, lastly, a bandage is to be applied. It is also a good rule to put on the four-tailed bandage, used for fractures of the lower jaw, so as to hinder the patient from opening his mouth. The bleeding always ceases on the sides of the wound being accurately brought together.

6. For three days, only liquid food, put into the mouth with a spoon, is to be allowed. At the end of this time, the union ought to be completed. The bandage, &c. may now be taken off. The pins, however, may be left another day or two, when they are to be withdrawn, and strips of adhesive plaster applied.

7. When the hare-lip is double, one fissure should be cured, before attempting the operation on the other.

8. When a fleshy knob intervenes between the edges of the fissure, it must be cut away, before paring off the margins of the cleft.

9. When the incisor teeth stand out exces-

sively forwards, they must be extracted, ere the operation is undertaken.

10. There being a cleft in the roof of the mouth is no reason against performing the operation, as the fissure in the palate is observed to undergo afterwards a gradual diminution; and, when the patient is young, becomes at length entirely effaced.

11. It deserves attention, that all wounds of the lip are commonly united with the twisted suture, just like the hare-lip.

12. In cutting away any disease, or tumor, from the lip, it is always a rule among surgeons to remove a triangular piece of the part, so as to make a wound, which resembles that of the hare-lip, admits of being united with the twisted suture, and cured without any deformity remaining.

HERNIA.

The passage of any of the abdominal viscera, from the cavity in which they are naturally contained, into a preternatural bag, formed by the protrusion of the peritoneum, constitutes a *hernia* or *rupture*. Custom, however, has extended these appellations to examples of strangulation, caused by internal changes of posi-

tion, not indicated by external swellings, as when the bowels pass through an aperture in the diaphragm, or are confined by preternatural bands of adhesion. The portion of peritoneum, which is protruded, in ordinary cases, is termed the *hernial sac*, which, with its contents, either passes through some natural opening in the parietes of the abdomen, or is forced through a part where no opening naturally exists. The true hernial sac, composed of the peritoneum, receives some adventitious coverings, formed of condensed cellular substance, and of fasciæ. In large, old ruptures the great thickness of the sac is found to depend chiefly upon that of its outer investments. These external coverings are intimately adherent to the true hernial sac, which, therefore, can never be put back into the cavity of the abdomen again, after once it has been down long enough to acquire its connexion with the surrounding parts. Cases of the sac being reduced, are very rare, and hardly credited. Although the hernial sac usually appears thickened in large old ruptures, it is occasionally found much attenuated, and this, in such a degree, that the convolutions and vermicular motions of the intestines may be distinguished through the skin. Mr. A. Cooper has seen the bowels lie immediately under the

integuments, the sac having been burst by external violence. Excepting the hernia congenita, hernia of the bladder, and, perhaps, cases following wounds of the belly, or recurring after the operation, all ruptures have an hernial sac, that is to say, a covering of peritoneum. The contents of the sac are generally omentum, or intestines, which are the most moveable viscera in the abdomen. The small intestine, called ilium, being very near the ring, is particularly often protruded. Of the large intestines, the cæcum, and sigmoid flexure of the colon, are the most apt to form a hernia. In proportion as the hernial tumor grows larger, the parts, already protruded, may drag out others, until nearly all the viscera of the abdomen have become displaced. Besides omentum and intestine, the bladder, ovaries, uterus, spleen, and stomach, have been known, in less common cases, to compose the contents of a hernia. The groin, scrotum, labia pudendi, bend of the thigh, and navel, are the most frequent situation of ruptures. When the viscera lie just within the canal of the abdominal ring, or have descended quite into the groin, the case is called a *bubonocele*, or *inguinal hernia*. When the bowels have passed still further down, so as to get into the scrotum, the case is named an *oscheocele*, or

scrotal rupture. When the viscera insinuate themselves into the tunica vaginalis testis, before the communication between the cavity of this membrane and that of the abdomen is abolished in the young subject, the case is termed a *congenital hernia.* The rupture, occurring through the small opening, under the pubic extremity of Poupart's ligament, and manifesting itself at the bend of the thigh, is called the *femoral,* or *crural hernia,* sometimes *merocele.* The *exomphalos, omphalocele,* or *umbilical rupture,* happens at the navel, through the opening in the linea alba, destined for the passage of the blood-vessels of the fœtus. When herniæ occur at any other part of the linea alba, or at any other points of the front, sides, or back of the abdomen, not above specified, such cases are denominated *ventral ruptures.* The following are rare kinds of hernia. The bowels may, in either sex, be protruded by the side of the bladder, or rectum, constituting the *hernia of the perineum.* They may occasion a tumor in the vagina, called the *vaginal hernia.* They may be protruded at the foramen ovale, or at the ischiatic notch, composing what are called herniæ of those apertures. When the contents of a hernia are wholly intestine, it is termed an *enterocele*; when entirely omentum, an *epiplo-*

cele; and, when both omentum and intestine together, an *entero-epiplocele.* It would be endless to recite all the names derived from the contents of the tumor, such as *splenocele, cystocele, hepatocele, gastrocele, hysterocele,* &c. The hernia is said to be *reducible,* when the viscera are quite unattended by pain and inflammation, and are in the habit of descending and ascending again with ease. The case is termed *irreducible,* when the parts, though free from pain and inflammation, cannot be put back into the abdomen, owing to their size, in relation to the passage through which they have descended, adhesions to one another, or to the sac itself. The *strangulated,* or *incarcerated hernia,* is so named, when the viscera, not only cannot be reduced, but suffer such pressure from the *stricture* made on them in the passage, through which they are protruded, that the fecal matter is obstructed in its course through them, and the prolapsed viscera, and, indeed, those within the abdomen, become affected, first with inflammation, and then with gangrenous mischief, accompanied by most violent, and often fatal symptoms of general constitutional disturbance.

All the causes of hernia operate, either by increasing the pressure of the viscera, or diminishing the resistance of the abdominal pa-

rietes. The former are the *exciting*, the latter the *predisposing* causes of the disease. The pressure made on the viscera by the diaphragm, and abdominal muscles, may, on some occasions, be so increased, as to force the bowels out of the cavity of the belly, at the points capable of the least resistance, which are commonly at the abdominal ring, under Poupart's ligament, or at the navel. Hence, lifting or carrying burdens, running, jumping, straining at stool, vomiting, the efforts of parturition, coughing, and, in children, crying, are common exciting causes of hernia. Some persons seem certainly predisposed to this disease, as it occurs in them from the most trivial circumstances. Such predisposition has been imputed to a large size of the openings, through which herniæ mostly happen; to a weakness and relaxation of the margins of these openings; to preternatural laxity of the peritoneum; unusual length of the mesentery, &c. Pregnancy and dropsy predispose to ruptures, by distending the openings, through which the viscera are prone to descend. The sudden change, from a fat to a very emaciated state, predisposes to the disease, by the absorption of all the adipous matter which has a share in filling up and strengthening the points of danger. Penetrating wounds of the abdo-

men are often followed by herniæ, and so sometimes are violent contusions, destroying the power of resistance in a part of the abdominal parietes.

The general symptoms of a reducible hernia are, an indolent tumor in the groin, scrotum, labia pudendi, or navel; or in some other less common seat of a rupture: the swelling becomes smaller in the recumbent, and larger in the erect position; it admits of being put up into the abdomen by pressure, but falls down again when the pressure is discontinued; a rumbling sensation may often be perceived in the tumor; and, when the patient coughs, it becomes tense, and communicates an impulse to the fingers of an examiner. The disease in this state is sometimes unproductive of any other inconveniences, than such as arise from the weight and size of the swelling. In other instances, the patient seems particularly subject to colic complaints, indigestion, flatulence, &c.

An *enterocele* is denoted by the elasticity and smooth regular surface of the tumor, and by the guggling noise made when the parts return into the abdomen. An *epiplocele* is compressible, has a flabby feel, and an unequal surface.

Hernial tumors generally occur suddenly, and under some of those circumstances, which

have been enumerated as the most frequent causes of the disease. Although reducible herniæ are attended with no immediate danger, yet, if allowed to attain a large size, they render the patient incapable of an active life. But, whether large or small, they always expose him to the risk of having fresh parts protruded, and strangulation thereby induced.

The first symptoms of a *strangulated* hernia are a stoppage of the progress of the intestinal matter towards the anus, and inflammation of the contents of the tumor. The constipation may not be complete, when only a part of the diameter of the bowel is strangulated; and it is obvious, that stools may at first occur after the strangulation, as there is nothing preventing the discharge of whatever fecal matter happens to lie between the stricture and the anus. Stools may also be evacuated when the strangulated hernia contains only omentum. A complete constipation, however, has been known to arise from the strangulation of a very small piece of intestine, and even from that of a mere epiplocele. Immediately a hernia is incarcerated, the tumor becomes painful, and tension, and other symptoms of inflammation, quickly follow. The pain shoots from the stricture over the abdomen, which, after some time, also becomes tense and sore upon

being touched by the finger. The patient is afflicted with most distressing nausea and vomiting. The pulse is small, quick, and hard; the extremities are cold; and great anxiety and restlessness are experienced. After a time, hiccough comes on; the pulse is hardly perceptible, the breathing is feeble, and the whole body is covered by a cold clammy sweat. Mortification now begins in the contents of the rupture, and extends to the containing and neighbouring parts. The patient does not often survive this unfortunate state. On examining the body, after death, the peritoneum, and the bowels above the stricture, are found inflamed. The intestines are much distended by air, their convolutions adherent together, their surfaces covered with coagulating lymph, and their blood-vessels in a turgid state. Gangrenous spots are not uncommon. In the hernial sac, a turbid fluid is found effused, and the viscera more or less mortified.

TREATMENT OF HERNIA IN ITS DIFFERENT STATES AND FORMS.

1. The contents of every *reducible* rupture should be immediately put up into the abdomen, and be prevented from descending again by the patient constantly and unremittingly

wearing a proper truss. Whenever the parts are allowed to remain protruded, a risk is induced of an additional quantity of the viscera falling down into the sac, so as to bring on a strangulated state of the hernia. The neglected tumor will also gradually attain a troublesome and grievous magnitude. In young subjects, the incessant use of a truss may accomplish a permanent cure, the chance of which happy event, however, is always destroyed by suffering the parts occasionally to descend and dilate the opening, through which they pass.

2. In *irreducible* ruptures, the usual impediments to reduction are either a morbid thickening and enlargement of the omentum, or mesentery, in the hernia; adhesion of the viscera to each other, or to the hernial sac; or membranous bands crossing the cavity of this latter part. An irreducible hernia must be left in a great measure to itself, notwithstanding its bulk and gradual increase are sources of inconvenience, while the possibility of strangulation is a ground for the apprehension of danger. Opening the tumor, separating adhesion, removing the thickened omentum, and taking other steps, for the reduction of the hernia, are proceedings, attended with so much risk of inducing a dangerous and fatal

inflammation of the exposed parts, and, indeed, of the whole cavity of the abdomen, that they are quite unwarrantable. A few large, old, irreducible ruptures have been made to return into the abdomen by long confinement to bed, and low diet, with occasional bleeding and purging. In this way, Arnaud, Le Dran, and Hey, have been successful. It is obvious, that the plan can only succeed, when the impediment to reduction proceeds from an enlargement of the protruded parts, and not from adhesions. The absorption of the morbid mass might also certainly be promoted by combining, with the above means, the pressure of a suspensory bandage. This, indeed, should always be worn, to prevent the swelling from increasing in size. Patients, having irreducible herniæ, are to be advised to avoid all violent exertions, eat no indigestible flatulent food, and keep their bowels regularly open. When an obstruction occurs in the protruded part of the alimentary canal, relief may frequently be derived from purgative medicines and clysters, as a strangulation is not often present, because the opening, through which the parts of old irreducible ruptures descend, is generally very capacious.

3. The indication, in the treatment of all *strangulated* ruptures, is to liberate the parts

from stricture, and replace them in their natural situation. The most certain mode of accomplishing these desirable ends is by an operation, which generally consists in opening the swelling, dividing the stricture, and then putting back the protruded viscera into the abdomen. However, before having recourse to the knife, it is the duty of the surgeon to try some other plans, which are known to prove sometimes successful in effecting the reduction. The only exception to this remark are cases, in which no time can be spared, the symptoms having made considerable progress. For, it should be known, that the operation itself will generally be ineffectual, unless performed before the inflammation in the tumor and abdomen has attained too high a pitch. Hence, whatever means are tried, before the employment of the knife, they must never be suffered to consume an imprudent length of time; and no sooner have they decidedly failed, than the operation is immediately indicated. We have not any determinate criterion, by which we can be guided in every case in regard to the exact period, when it becomes dangerous and improper to persist in trying methods, which delay the use of the knife. Mr. A. Cooper thinks, that, when a general tenderness begins to diffuse itself over the abdomen, the operation

ought not to be any longer deferred. Certain it is, that the fatal result of all hernial cases is generally in a ratio to the advanced stage of the inflammation within the sac and the abdomen. In the operation, no very important parts need be cut, and the sooner it is done, the more likely is it to be followed by the patient's recovery. This fact, coupled with the unfortunate truth, that many deaths happen after operations, resorted to only in extremities, has even occasioned a suspicion, that, upon the whole, more lives might be preserved by employing the knife at once, or, at least, as soon as reduction by the hand has failed, than by devoting any time to plans, which cannot be depended upon. Howsoever this may be, no doubt can exist, that the surgeon should only try such methods, as experience most strongly recommends, and the fair trial of which, will not put off the operation to a period, when the chance of its success will be seriously lessened by the inflammatory mischief in the tumor and general cavity of the abdomen. The chief means, which are resorted to before the operation, are the manual attempts at reduction, bleeding, the warm bath, purgative medicines, and clysters, opiates, tobacco-clysters, the cold bath, and different warm and cold applications to the swelling. The endeavours to reduce the

parts by the hand are termed the *taxis*, which is certainly the first thing to be tried. The patient should lie down upon his back, and, in case of inguinal, or femoral hernia, the pelvis ought to be more elevated than the shoulders, the thorax somewhat raised, the thigh bent, and turned inwards. Gentle pressure is now to be made on the tumor, and its force is to be gradually increased; but all rude violence is to be reprobated, as incapable of doing good; apt to burst the protruded intestine, and produce other sorts of injury; and manifestly tending to exasperate the inflammation of the parts. One hand is usually employed for compressing the tumor, while the other is put near the mouth of the sac, and serves to keep such portions of the viscera as may be reduced, from escaping again. In an inguinal hernia, the parts descend downwards and inwards; in a femoral rupture, they pass from the abdomen first downwards, and then forwards—circumstances, which a surgeon must understand, ere he can know how to direct the pressure in a judicious manner. Supposing the first trials of the taxis to have failed, the next thing very commonly adopted is *bleeding*. This operation is practised on the principle of inducing swooning and a general relaxation, a state, which is deemed highly propitious to the reduction of

a hernia. The loss of blood likewise retards the inflammatory symptoms of the disease. The blood ought to be taken away suddenly, and freely. Therefore, surgeons often make an opening in a vein in each arm, or else take care to make rather a large aperture in the vessel. These methods will generally make the patient exceedingly faint, particularly, if they are practised as he is in a standing position. Immediately he is inclined to faint, the favourable moment for trying the taxis again is not to be lost. Bleeding has been too much decried by Wilmer and Alanson, while praises too unlimited have been conferred on it by Pott, B. Bell, &c. Perhaps, it ought to be restricted to examples, in which the tumor is painful and inflamed, the abdomen sore and tense, and the constitution sufficiently strong. However, since most cases will belong to this description, bleeding must still be regarded as deserving of general recommendation. The *warm bath* is frequently tried, when venesection has not been effectual. It acts, like bleeding, in producing an universal faintness and relaxation, in which state the hernia sometimes retires by itself, or on being compressed. Whether the warm bath should be tried, or not, must depend upon the time necessary for its preparation. Although it is deserving of some praise, the degree of

success, resulting from it, has certainly not been such, as to justify delaying materially a recourse to other more effectual measures. *Purgatives* seem only to increase the distressing symptoms of strangulated herniæ, without augmenting the chance of reduction. They are now only exhibited in cases of slight obstruction, and inflamed omental ruptures. Here, they may prove truly beneficial, and their effect may be assisted with *purgative clysters.* No cathartics, however, will usually be borne by the stomach in the present disorder, unless they are conjoined with opium. *Tobacco-clysters* are now acknowledged by all men of experience to be, next to the operation, the most certain means of accomplishing the reduction of a strangulated hernia. An infusion of ℥j of tobacco for ten minutes in a pint of boiling water, is what is generally used. One half is to be injected first, and, the rest some time afterwards, if the remedy excite no violent deleterious effects. The smoke of the plant has also been introduced into the bowels by means of an apparatus for the purpose; but, the fluid clyster is almost universally preferred, as being the least troublesome. *Opiates* have undoubtedly not been extensively successful, and the most that can be urged in their favour is, that they sometimes suspend the pain and sickness, even where they prove

ultimately inefficacious. With respect to the applications to the tumor itself, the plan of *filling bladders with pounded ice, tying them up, and laying them on the hernia,* is what is most strongly recommended by surgeons of experience. When ice cannot be obtained, cold mixtures, made with vinegar and the muriate of ammonia, and solutions of nitre and common salt, and put into bladders, may be used. The topical application of cold, and the injection of tobacco-clysters, form together the most powerful means of reduction, independently of the operation, While a trial of them is made, gentle manual attempts are not to be omitted. *Warm poultices* and *fomentations* have sunk into contempt, among all well informed surgeons.

4. Supposing the best of the foregoing methods to have failed, the operation ought to be immediately performed; before describing it, some anatomical circumstances claim attention. In the *bubonocele,* the viscera descend in the direction of the spermatic cord, towards the abdominal ring, out of which opening they are generally protruded. The ring has been erroneously imagined to be shut up behind merely by the peritoneum, while, in reality, there exists in such situation a thin aponeurosis, called the fascia transversalis, which is extended

from the posterior edge of Poupart's ligament to the back surface of the transverse muscle. The abdominal ring is strictly to be regarded as the lower, or outer opening of a canal, for the passage of the spermatic cord through the parietes of the abdomen. The upper, or inner opening of this canal, which is the place where the spermatic cord first enters the passage, and the point at which a hernia first quits the abdomen, is situated about an inch and an half, in the direction upwards and outwards, from the pubes towards the spine of the ilium. The canal extends obliquely between this inner opening and the ring, being closed in front by the aponeurosis of the external oblique, and behind by the fascia transversalis. The epigastric artery arises from the external iliac, runs obliquely upwards and inwards, along the inner margin of the internal opening of the canal, and then passes about half an inch, or an inch, from the upper extremity of the abdominal ring, in its course to the posterior surface of the rectus muscle. The foregoing anatomical circumstances only differ in the female, inasmuch as the round ligament of the uterus takes the place of the spermatic cord, and the ring is smaller than in male subjects. In common bubonoceles, the viscera quit the abdomen at the inner opening of the canal, pass under the

margin of the internal oblique and transverse muscle, go through the canal, and make a protrusion at the abdominal ring. In this course, they carry with them the production of peritoneum constituting the hernial sac. Although, in the natural state, and in recent herniæ, the inner opening of the canal is about an inch and a half nearer the spine of the ilium, than the ring is, yet in old cases the former aperture is so dilated by the pressure of the viscera, that it becomes more and more approximated to the latter, rendering the passage into the abdomen more direct. The bubonocele lies over the spermatic vessel, the sac, however, being covered by the cremaster muscle, sheath of the cord, and some tendinous fibres derived from the aponeurosis of the external oblique muscle. As the hernia descends further, it lies in front of the cord, and of the testicle and its coverings. In some unusual instances, the cord has been seen in front of the sac by Le Dran, Schmucker, and Blizard. A. Cooper, Pott, and Camper notice the vas deferens being occasionally on one side of the sac, and the rest of the spermatic vessels on the other. Camper and Hey mention the vas deferens being situated before, and the other vessel behind the sac. According to Cooper and Camper, the spermatic vessels may lie before, and the vas deferens

behind the sac. In recent small bubonoceles, the most frequent situation of the stricture is at the upper opening of the canal; in old, large cases, it is generally at the abdominal ring. The strangulation may exist in both places at once. The possibility also of the stricture being occasionally produced by a thickening of the neck of the hernial sac is now generally acknowledged. In certain cases, the hernia enters the above-described canal, but is not protruded through the ring. A strangulation may in such instances be made by the margin of the internal oblique and transverse muscles. In some rare bubonoceles, the viscera pass directly under the edge of the transverse muscle, and through the abdominal ring. Such a case may occur, when the fascia transversalis is weak, does not exist at all, or is broken. In this species of hernia, the epigastric artery is situated on the outside of the mouth of the sac, and runs at the distance of about three quarters of an inch from the upper and outer extremity of the abdominal ring. The sac is not covered by the cremaster, as in common instances. The case has been distinguished by the name of *ventro-inguinal* hernia. Forty-nine, out of fifty ruptures in men, are estimated to be bubonoceles. In women, such herniæ are rather unfrequent. The nature of

the disease may be known by the swelling having begun above, and gradually descended towards the scrotum; by the inability of feeling the spermatic cord; by the testicle being perceptible behind the tumor; conjoined with the symptoms of hernia already described.—The operation for a strangulated bubonocele consists in making an incision through the integuments, dissecting down to the sac, and opening it, and replacing the protruded viscera. In the operation for common cases, the first incision should begin an inch above the external angle of the ring, and be continued down to the lower part of the swelling. By this cut, the external pubic branch of the femoral artery, is apt to be divided, and, when the hemorrhage is at all considerable, the vessel ought to be immediately tied. The cellular substance, between the skin and the sac, and the external investments of the latter, are to be cautiously divided, layer by layer. The fibres are to be raised with a pair of dissecting forceps, and divided with the knife having its edge turned rather horizontally. As fluid is often lodged at the bottom of the sac, this situation is deemed the safest for making the opening. The above kind of dissection should obviously be carried on only at one point, till the sac is exposed, when a little bit of it ought to be

raised with the forceps, and divided with the knife, the edge of which should be inclined horizontally. A small opening having been made in the sac, a director is to be introduced, by means of which and a curved bistoury the sac is to be slit open up to the ring. The return of the protruded viscera may sometimes be now accomplished without dividing the stricture. However, rather than use the least violence for this purpose, the surgeon ought always to make the necessary use of the knife. He should gently introduce his finger into the neck of the sac, in order to feel where the incarceration is seated. A director is then to be passed under the stricture, which is to be divided with a curved probe-pointed bistoury. In consequence of the proximity of the epigastric artery to the mouth of the sac, the direction, in which this incision is made, is a matter of high importance. When the hernia passes, as it commonly does, through the upper opening of the abdominal canal, the cut should be made upwards and outwards. But, in the less frequent instance, in which the hernia is, what has been termed, *ventro-inguinal*, the incision ought to be made upwards and inwards. Thus Chopart and Desault used very properly to cut upwards and outwards, when the spermatic cord was behind, or on the inside of the sac;

upwards and inwards, when it was before or on the outside of the hernia. Mr. A. Cooper, in order to prevent any dangerous error, advises the division of the ring to be made in all cases directly upwards. The exact part which should be cut, is the middle of the superior margin of the ring. When the stricture is formed at the upper opening of the canal, by the margin of the transverse muscle, it is best to use the bistoury recommended by Mr. A. Cooper, the cutting edge of which extends only a certain distance from the point. The latter gentleman has proposed to omit cutting the neck of the sac, in dividing the stricture, as being a mode less likely to excite inflammation of the peritoneum, and capable of preventing the blood from insinuating itself into the abdomen, in the event of the epigastric artery being wounded. Mr. Lawrence, however, objects, that there is no risk of wounding the artery, when the cut is made in the proper direction; that the plan is too difficult for the generality of surgeons; and that it lessens the chance of a radical cure by leaving an inch and a half of the sac undivided, and remaining as a sort of pouch ready for the reception of the bowels again. The last step of the operation consists in putting back the prolapsed bowels into the abdomen;

to facilitate which object, the limb is to be bent. The return of the parts should always be made, unless they are decidedly gangrenous. A dark brown, or chocolate colour of the intestine, does not evince that it is actually mortified. The blood in its veins may still be urged forwards by pressure. In gangrene, the part is quite black, and gives way under the finger. The omentum, when mortified or diseased, also requires, as well as a gangrenous portion of intestine, particular treatment. When the hernial contents are adherent to each other, or the sac, the adhesions, if recent and slight, may be broken with the finger; if old and strong, they must be cautiously divided with the knife. After reducing the parts, surgeons make it an invariable maxim to assure themselves, that the viscera are freely within the abdomen, by passing their finger through the ring into the cavity of the peritoneum. A surgeon who exercises manual roughness or force, in any part of this operation, is totally unfit for his office. The preceding method of operating would not be proper in many large, old, adherent herniæ, on account of the difficulty of separating all the adhesions, the violence unavoidable in such an attempt, the extensive exposure, the occasional impossibility of keeping the returned parts in the abdomen,

and the large size of the ring, which removes all chance of the cure being radical. Here the surgeon should be content with making an incision through the integuments over the abdominal ring, opening the fascia spread over the sac, introducing a director, and dividing the stricture. If much difficulty should occur, an opening must be made in the sac itself. The stricture having been cut, an endeavour is to be made to return such of the viscera as may admit of reduction. The edges of the incision are then to be brought into contact with adhesive plaster. When the hernia has not passed the ring, the operation consists in making an incision through the tendon of the external oblique muscle, opening the sac, and dividing the edge of the transverse and internal oblique muscles either upwards, or upwards and outwards. In all operations for herniæ, when the omentum is much thickened and enlarged, the diseased portion is to be cut off, and the rest reduced. The practice of including the whole omentum in a ligature is highly objectionable, as it tends to make that membrane inflame up to the stomach and transverse arch of the colon, and bring on distressing and fatal complaints. The ligature, indeed, may be regarded as producing a worse strangulation than what has just been removed. When the diseased

part has been cut off, if the vessels bleed, they are to be singly tied with very small ligatures. When the intestine in the hernial sac is in a gangrenous state, it should be known that the bowel is generally adherent to the parietes of the abdomen behind the ring. These adhesions are of great importance in the progress of the cure, and, therefore, ought never to be disturbed. The stricture may be divided, when the bowel has not given way; and, when it has, such an incision may be made in it, as will facilitate the exit of its contents. Mild purgatives and clysters are now proper to be administered. In cases where only a part of a protruded intestine is mortified, the bowel ought to be reduced; as the adhesions will keep it from moving far from the ring, and also prevent its contents from becoming extravasated in the abdomen. The dead portion should, if possible, be turned towards the ring. Mild aperient medicines and clysters are indicated. In some cases, the fæces, after passing more or less out of the wound, resume in time their natural course; in some, the patient sinks under the disease; while, in others, he recovers with the loathsome affliction of an artificial anus. When the whole diameter of the intestine is in a sphacelated state, some surgeons choose to remove the mortified part, and con-

nect the two ends together with two or three stitches of thread. The adhesion which has usually occurred behind the ring, is on no account to be disturbed. On the whole, it is deemed the most prudent in these cases, merely to divide the stricture, and leave other things to nature. Sewing and disturbing the parts, are now justly censured by all the best surgeons.

5. The *femoral*, or *crural hernia*, is that to which women are chiefly subject; the viscera descending under the pubic extremity of Poupart's ligament; or, as it is often called, the crural arch. This is in fact the lower edge of the aponeurosis of the external oblique muscle, and extends across from the anterior, superior, spinous process of the os ilium to the os pubis. Its insertion into this last bone is broad; beginning at the spine, and running along the crista. Its position is nearly horizontal in the erect state of the body. The part of it, fixed to the spine of the pubes, resembles a firm, round, tendinous cord, while the portion inserted into the crista of that bone, is thinner, lies more backward, or deeply, and has a posterior margin, which has a sharp feel. The anterior edge of Poupart's ligament forms a straight line; the posterior border has an arched form, in consequence of the expanded

portion which is attached to the crista of the os pubis. Hence the expression, *crural arch*, used by Gimbernat. Next to the thin edge of the arch is the external iliac vein; and on the outside of this vessel lies the artery. An absorbent gland is sometimes found between the vein and the tendon. The protrusion of the viscera under Poupart's ligament is prevented by certain fasciæ, which shut up the space below it every where except a small point, which is left between the iliac veins, and the thin border of the above ligament. This point is only closed by a cellular substance, together with, occasionally, a lymphatic gland. It is the place where the bowels are liable to be protruded, and has been called by Gimbernat the *crural*, by Hey, the *femoral ring*. The prolapsed parts lie between the thin border of the crural arch, and the external iliac vein. They first descend from the abdomen nearly in a perpendicular direction, and come into the hollow of the pectineus. The resistance which the viscera meet to their further passage downwards, makes them project forwards, so as in general to lie in front of Poupart's ligament, the body of the sac forming a right angle with the neck. The hernia is situated on the outside of the fascia of the thigh, excepting unusual instances, in

which the viscera glide into the sheath of the crural vessels. The sac, however, has a thin, tendinous covering, named by Mr. A. Cooper, the *fascia propria.* The upper end of what is named the *falciform process* of the femoral fascia passes over the upper and outer part of the neck of the tumor, is then folded under the crural arch, and is continued to its thin posterior border. The strangulation is produced, as Gimbernat first discovered, by the pressure of the thin back margin of Poupart's ligament, or of the crural arch. The above falciform process has also an inferior share in contributing to the strangulation, and the stricture is certainly diminished, by relaxing the femoral fascia, and this production of it. The epigastric artery passes obliquely upwards and inwards, on the outside of the hernial sac, about half an inch from its neck. When the obturator artery arises from the epigastric, it may run to the obturator foramen, either over the inner, or outer margin of the sac. The iliac vein lies on its outside. The round ligament of the uterus, or, in men, the spermatic cord, passes over the upper part of the swelling, not more than half an inch from the mouth of the sac. The space through which the viscera descend being very small, the femoral hernia is seldom large. It mostly contains intestine,

omentum alone being rarely observed in the tumor. Small femoral herniæ may be mistaken for an enlarged inguinal gland. Hence inquiry should always be made, whether the swelling appeared suddenly, after a violent effort; whether it increases on exertions, and diminishes in the recumbent posture; and the surgeon should feel, whether it communicates an impulse on the patient's coughing. If, with these symptoms, complaints of the bowels exist, the case must be a hernia. When there is doubt, and bad symptoms prevail, it is the duty of the surgeon to act as if the case were a rupture. This mistake can then do no serious harm, while neglecting certain measures might be fatal, in the event of the case being a hernia. The femoral rupture easily becomes strangulated, while the closeness of the stricture diminishes the chance of reduction by any means but the operation; and the great pressure which the parts experience, must render delay extremely dangerous. Putting off the operation for a long while, in cases of strangulated inguinal hernia, is a very bad practice; but, in femoral herniæ, the thing is still more to be deprecated, as the viscera mortify, and the patient dies in a much shorter time. Hence, Mr. A. Cooper declares, that, if he himself had a crural rupture, he would have

the operation performed after twelve hours, in case tobacco-clysters should not succeed. In the operation, the incision of the integuments is to begin an inch above the crural ring, and be carried obliquely downwards and outwards, as advised by Mr. Lawrence. The outer investment of the hernial sac is to be cut through in the same way as was described in treating of the inguinal hernia. Great caution is necessary in making an opening into the sac, as there is seldom much fluid in it, or any omentum with the intestine. In cutting the stricture, the direction of the incision is highly important. If the knife be directed upwards and outwards, the epigastric artery is endangered. In cutting straight upwards, the spermatic cord is in peril in male patients. An incision of the most interior part of the stricture is only attended with risk, when the obturator artery arises from the epigastric, and runs round the inner margin of the sac. Mr. Lawrence, with great reason, thinks that the best and safest method is to divide the thin posterior border of the crural arch, at the part first advised by Gimbernat, namely, as near as possible to its insertion into the os pubis. This is the very part, which in fact produces the stricture. The tip of the nail, or a director, is to be put under the part of the tendon to be cut.

No more must be divided than is necessary, as, in case of the obturator artery running round the inner margin of the neck of the sac, it is in some considerable danger.

6. The *umbilical hernia* is that, in which the viscera are protruded through the navel. Sometimes, the protrusion happens in the vicinity of this part. Infants are chiefly subject to umbilical herniæ, properly so called, where the bowels are protruded through the umbilicus itself. Adults are more liable to that species of the complaint, in which the hernia happens somewhere near this opening. The protruded parts tend downwards, so that the opening into the abdomen is at the upper part of the swelling. When umbilical herniæ are neglected, they are apt to attain such a size as to hang down lower than the pubes, incapacitating the patient from active exertion, and forming a constant source of intestinal complaints. This kind of rupture, like most others, always has originally a hernial sac, though mistaken notions on this point have been entertained by Dionis, Garengeot, and J. L. Petit; perhaps, from a false idea, that the umbilical vessels perforate the peritoneum, at the part where they enter the body of the fœtus. The sac can always be seen at the circumference of the tumor, when it is not so distinct in front, in

consequence of a close adhesion to the cicatrix of the integuments. In a large, old exomphalos, indeed, the pressure of the viscera has sometimes occasioned an entire absorption of the sac, and the bowels lie directly under the skin. The umbilical hernia is often brought on by dropsy, pregnancy, and excessive corpulency. It almost always contains omentum, whether intestine be present or not. The bowel very often protruded, is the transverse arch of the colon. Patients with large umbilical herniæ, are particularly subject to colic complaints, flatulence, vomiting, &c. These complaints often induce a suspicion of strangulation, when this state does not exist. Were the operation performed in such circumstances, the blunder would be likely to have most hurtful and fatal consequences.—There are three species of the exomphalos. In the *congenital umbilical hernia*, the funis ends in a bag, in which the protruded viscera are contained, having no covering of integuments. When such a swelling is of moderate size, it may be cured, either by a bandage, or the ligature. The *umbilical hernia in adults*, is to be treated on the same principles as an inguinal, or crural rupture: when reducible, it is to be kept up with a truss; when irreducible, it should be supported with bandages, or a truss having a

hollow pad. When strangulated, and not admitting of reduction, or relief from other means, the surgeon should perform the operation, which, however, is not so often successful in this, as other herniæ, owing to the dependence of the symptoms rather on intestinal disorder, than the stricture. The coverings of the hernia being often thin, the division of them is to be made with due caution. The stricture is to be removed by cutting upwards. Mr. A. Cooper advises the hernia to be opened by an incision shaped like the letter T inverted: others prefer one straight longitudinal cut. Were the hernia large, it would certainly be better not to open the sac at all; but, be content with dividing the stricture.—The *umbilical hernia of children* happens before the navel has acquired due strength after its cicatrization. The disease comes on most frequently in the second, third, and fourth months, after birth. This species of exomphalos admits of being radically cured, while the child is young, either by the compression of a bandage, or by tying the tumor with a ligature, after reducing the viscera. The last plan was attended with a most remarkable degree of success, under the management of the celebrated Desault.

7. In the *congenital hernia*, the protruded viscera lie in the cavity of the tunica vaginalis

of the testicle, which membrane forms, as it were, the hernial sac. In the fœtal state, the testicle is situated near the kidney, where it receives a covering from the peritoneum, constituting its future tunica albuginea. In the latter months of pregnancy, this organ passes through the abdominal ring into the scrotum, carrying before it a portion of the peritoneum, which is to form the tunica vaginalis. In the natural progress of things, the communication between this last membranous bag and the cavity of the abdomen, is abolished before the time of birth. When such a closure remains unaccomplished after the child is born, a congenital hernia must easily take place, on the operation of any of the usual exciting causes. The rupture is only strictly congenital, or actually existent at the time of birth, when the omentum, or intestine, being adherent to the testicle before birth, followed it in its descent into the scrotum. When the testicle is late in coming into the tunica vaginalis, the hernia may precede its appearance. The rupture may exist, while the gland has but just passed the ring, and prevents the use of a truss. The hernia may descend, while the testicle is at the ring. Both the rupture and the gland may come down together, or the testicle may present itself at the ring, after the hernia is

formed, and bring on symptoms of strangulation. In the congenital hernia, the testicle cannot be felt at the back of the tumor, as in common scrotal herniæ. The disease may be suspected from its having existed from infancy. It is the most common rupture of male children. When the bowels are reduced, and kept up while the patient is young, a radical cure is very likely to ensue. But, before advising the use of a truss, the surgeon ought to be assured, that the testicle has descended. When the case becomes strangulated, the stricture is often produced by a contraction of the neck of the sac. It may, however, happen at the abdominal ring, or, at the inner opening of the canal, as in bubonoceles. The general circumstances of the operation are the same as in the latter cases.—An unusual sort of rupture is sometimes met with, in which the viscera are protruded into the tunica vaginalis, but, yet, have a peritoneal hernial sac. The case sometimes happens, when the communication of the tunica vaginalis with the abdomen is closed above, while the contraction does not extend far down. Here, in an operation, it would be requisite to divide the true hernial sac, as well as the tunica vaginalis.

8. *Ventral ruptures* comprehend all cases, where the protrusion does not happen either at

the abdominal, or femoral ring, or at the navel. They mostly occur in the course of the linea alba. They are in general easily reduced and seldom strangulated. When they follow wounds, or abscesses, it is asserted, that they have no hernial sac. They demand the same treatment as is applicable to ruptures in general.

HERNIA HUMORALIS.

SYMPTOMS.

This is the name commonly applied to an acute inflammation of one of the testicles, especially when arising from the irritation produced in the urethra by a clap. The hernia humoralis is indicated by the pain and swelling of the affected testicle, and the redness and tension of the scrotum. The pain extends up the spermatic cord to the loins, and, when a suspensory bandage is not worn, is increased by the least motion. There is a good deal of symptomatic fever; the pulse is hard and frequent; the urine scanty, and high-coloured, &c. When the inflammation of the testicle arises as a consequence of a gonorrhœa, the discharge from the urethra generally undergoes a cessation, or considerable diminution, at the period when the part begins to swell and be

painful. In some instances, notwithstanding the clap has been severe, the patient has either neglected to keep up the testicles in a bag-truss, has been guilty of imprudent exercise, has had painful erections, has not abstained altogether from venery during the complaint, or has indulged in the use of spirits. In other cases, he has endeavoured to suppress the discharge by drastic purges, large doses of copaiva balsam, or wearing bougies.

TREATMENT.

1. At first blood is to be taken away from the patient, in a quantity proportioned to his age and strength, and several leeches may be put on the scrotum. Low diet, and complete rest in a horizontal posture, are to be enjoined. The scrotum is to be covered with an emollient poultice, and kept up with a suspensory bandage. Cooling, laxative drinks should be prescribed, such as barley-water, in which figs have been boiled; water acidulated with cream of tartar, and sweetened with sugar, &c. In a very early stage of the inflammation, it may be best to employ cold discutient applications, such as ice, or the lotion of vinegar and sal ammoniac.

2. It has been proposed to try to reproduce the discharge from the urethra, as a

means of relieving the affection of the testicle. Holding the penis over the steam of warm water, covering it with an emollient poultice, and introducing bougies, have been advised for such purpose. Few well-informed surgeons have recourse to these measures.

3. When the scrotum begins to be corrugated again, the pain to subside, and the swelling to decrease, it is proper to add some resolvent to the poultice. Towards the end, a mercurial plaster is the best application.

4. The resolution of an inflammation of the testicle always requires time. An induration of the epididymis will sometimes last all the patient's life. The latter sort of hardness is most likely to be removed by frictions with camphorated mercurial ointment.

HYDROCELE.

Although this word strictly denotes any watery tumor, it is restricted by surgeons to such a swelling situated in the scrotum. The most common, and interesting species of hydrocele is that, which consists of a collection of water in the tunica vaginalis. This case has been called *hydrocele by extravasation*, in order to distinguish it from other rarer collections

of fluid which take place in cysts in the course of the spermatic cord, and from other aqueous accumulations, which sometimes occur in old hernial sacs. The term of *hydrocele by infiltration* has been applied to the œdema of the scrotum. The hydrocele of the tunica vaginalis is called *congenital*, when the cavity of that membrane is open at its upper part into the abdomen.

SYMPTOMS OF THE COMMON HYDROCELE.

The swelling begins at the lower part of the scrotum, and gradually mounts upwards in front of the spermatic cord, nearly to the abdominal ring. Its progress is slow, so that it is generally six or eight months before it attains the foregoing height. The tumor has an oblong pyriform shape, being more voluminous below, than above. The corrugations of the scrotum are no longer visible, and the raphe is always pushed towards the sound side. A distinct fluctuation may be felt on putting the fingers on one side of the tumor, and gently tapping at the point which is diametrically opposite. Lastly, when the tunica vaginalis is not much thickened, and the fluid not turbid, the swelling presents a transparent appearance, on placing a candle behind it.

CAUSES.

These seem as yet to be but imperfectly understood. Some have imputed the disease to an increased exhalation of serum into the tunica vaginalis; others, to the absorbents not duly executing their office. But, it is the particular cause of these events, that it might be useful to understand. In most cases, the collection of fluid appears to happen spontaneously; in some instances, it has followed a contusion, or considerable chafing of the scrotum. Richerand mentions a man, little accustomed to riding on horseback, who became affected with the complaint after performing a long rough journey in this way. The strongest and most healthy persons are frequently seen labouring under the disease. Its existence seems to have no dependence on a dropsical habit or general weakness. It is almost always entirely a local disease which can easily be cured. A late author has advanced the doctrine, that hydroceles sometimes proceed from an irritable state of the urethra, and he assures us, that, by treatment of this canal with bougies, after the hydrocele has been tapped, the water will often be hindered from collecting again.—(*Ramsden.*) The disease is not attended with danger, but, its weight is inconvenient, and obliges the patient always to wear a sus-

pensory, to prevent painful shootings in the spermatic cord. The friction of the tumor against the inside of the thighs may occasion troublesome excoriations. When the swelling is very large, it draws over it the integuments of the penis in such a manner, as to make the latter organ hardly distinguishable, and quite incapable of copulation.

TREATMENT.

1. The palliative cure of the common hydrocele consists in puncturing the swelling with a small trocar, and letting out the fluid. While the patient sits on the edge of his bed, the surgeon is to take hold of the back part of the tumor with his left hand, so as to propel forwards and downwards the fluid contained in the tunica vaginalis. The front and lower part of the swelling being thus rendered prominent, a small-sized trocar is to be pushed into it, in the direction upwards and backwards. Care must be taken not to urge on the instrument, after it has penetrated the tunica vaginalis. The stilette must now be withdrawn, while the cannula is pushed a little more onwards. The surgeon is always to avoid injuring the testicle with the end of the tube.

2. The radical cure of this disease is effected

by exciting such an inflammation of the cavity, in which the fluid collects, as leads to its abolition, by the tunica albuginea and tunica vaginalis becoming every where adherent together. This is the commonly received opinion, though Mr. Ramsden has lately maintained, that no obliteration of the above cavity usually happens. After discharging the fluid, as already related, the requisite degree of inflammation is to be excited, by introducing a mixture of about two parts of port wine, and one of warm water, into the cavity of the tunica vaginalis. This is done by means of an elastic gum syringe, with a separate pipe, one end of which is made to fit the cannula of the trocar, and the other the neck of the elastic bottle. The pipe is furnished with a valvular contrivance, which hinders the injection from regurgitating. The tunica vaginalis is to be distended with the injection, which is to be left in about five minutes. The pipe is then to be taken away, and the lotion be completely discharged through the cannula. A piece of soap-plaster is to be put over the puncture, and the scrotum is to be kept up with a suspensory. When the testicle begins to inflame, an emollient poultice is to be applied. In case a hydrocele should be very large, the patient should at first be content with having the fluid let out,

and as soon as a more moderate quantity has collected, the radical cure may be undertaken.

HYPOPIUM.

SYMPTOMS.

The hypopium is an abscess within the eye. The aqueous humor loses its transparency, in consequence of becoming blended with a fluid, resembling pus, which is effused from the inflamed membrane of the eye, in cases, where an acute ophthalmy is very intense. Hypopium rarely happens unless the inflammation be exceedingly violent. A yellow semilunar streak is first seen at the bottom of the anterior chamber, and gradually augments, till it conceals the whole of the iris.

TREATMENT.

1. The surgeon should at first try to diminish the vehemence of the ophthalmy, as the most effectual method of preventing the increase of the hypopium. In proportion as the absorbents take up the purulent matter, the aqueous humor recovers its transparency. Making a puncture in the cornea, for the discharge of the matter, is in this stage of the case regarded by Scarpa as injudicious, being likely to induce a prolapsus of the iris, and the escape of the

crystalline and vitreous humors. Mr. Wardrop, however, has approved of this proceeding.

2. When the case is more advanced, the quantity of matter large, the eye enormously swollen, its coats and humors confounded, and the pain excessive, making a puncture is proper. The fever attendant on this state, is so violent as to threaten life itself, while the proximity of the brain renders this organ liable to become affected. The sight is now irrecoverably lost, and the great object is to relieve the severe pain, and other bad symptoms, by making an incision through the cornea, in the manner adopted in the extraction of the cataract.

INFLAMMATION.

SYMPTOMS.

Inflammation is attended with four remarkable symptoms in the part affected, namely, pain, redness, swelling, and heat. Pain, indeed, if we are to understand by the term a degree of agony, does not constantly accompany the affection. The pruritus, which precedes and attends certain cutaneous eruptions, so far from being painful, occasions rather an agreeable sensation, and it is only when the increase of sensibility is carried beyond a particular pitch,

that it amounts to pain. In phlegmonous inflammation, the suffering is said to be joined with an annoying sense of weight; in erysipelas, the pain is of a burning kind; in anthrax, it is accompanied by a feeling of stiffness. The severity of the pain is in proportion to the vehemence of the inflammation, the sensibility of the parts, and the resistance, which their structure makes to the tumefaction. The swelling is chiefly occasioned by the determination of blood to the vessels of the part, and by an effusion of coagulating lymph in the interstices of the cellular substance. The considerable injection of the small vessels with red blood, and their dilatation, afford some explanation of the manner in which the preternatural redness arises. The experiments, which Hunter made with the thermometer, tend to evince, that the real augmentation of the heat of an inflamed part is inconsiderable, although it seems to be very great, when a judgment is derived from the patient's feelings. Phlegmon, or what may be called common inflammation, has been regarded by many writers as an inflammation of the cellular membrane. Its frequent occurrence in every situation, both internal and external, has been accounted for by the way in which the cellular substance pervades the texture of almost every

part of the body. Phlegmon is represented, as being attended with more swelling, than any other species of inflammation. The bright red colour in the centre of the tumor gradually extends towards the circumference, and is insensibly lost on the surrounding skin. The heat is said to resemble such as would be produced by the steam of boiling water, and the pain is throbbing. The pulsations of a phlegmonous inflammation are synchronous with those of the arteries in general. The throbbing may readily be felt by the surgeon, when he touches the part, all the small vessels of which are dilated, and beat in a preternatural degree. In an ordinary whitlow, this vehement throbbing is not confined to the finger, but affects the large arteries a considerable way up the limb. When an inflammation is of trivial extent, and not seriously painful, the effects of the complaint are altogether local. In the contrary case, the whole circulation partakes in the excitement, and the inflammatory fever occurs.

CAUSES.

The exciting causes of phlegmon are all of a local kind, that is to say, they operate immediately on the part affected. Thus, a thorn sticking in the flesh; an extravasation of the feces, or urine; blows on parts; burns; scalds;

exposure to excessive cold; the application of stimulating substances; wounds; and various kinds of external violence, &c. are followed by different degrees of phlegmonous inflammation. Certainly, there are, in particular constitutions, circumstances, which may be called *predisposing*, and which make the access of inflammation exceedingly prone to happen from very slight causes. Persons of a sanguineous temperament, and who live above par, will generally be found to have a tendency to inflammation. The *proximate* cause of this affection is a subject which demands more disquisition than our limits will allow. Plethora and obstruction have been often brought forward, and as repeatedly refuted. The sentiment, which appears at present to prevail the most extensively, is, that the proximate cause of inflammation depends chiefly upon an increased action of the arteries of the part.

TREATMENT.

1. The first object is to take away the exciting cause, when possible. When the affection is excited by extravasated urine, by friction, by stimulating applications, by the lodgment of any extraneous substance in the flesh, &c. the surgeon often has it in his power to render most essential service, by removing at

once what excites and keeps up the complaint. Frequently the exciting cause is transient in its operation, and yet the inflammation cannot be prevented from running a certain course. Thus, many kinds of external violence are inflicted in a moment; but inflammation must follow, though the duration of the circumstance which gave rise to the process, has ceased.

2. Bleeding holds the first rank among the means, which we possess, for diminishing and curing inflammation. This evacuation is called *general*, when the blood is taken from a large vessel, at a distance from the inflamed part; *local*, or *topical*, when the blood is evacuated by leeches, scarifications, or cupping-glasses, from the vessels which are near, or belong to, the seat of the inflammation. However, objections have been urged against topical bleeding, except when the skin, over and near the inflamed part, is itself free from the inflammatory affection.—(*Richerand, Nos. Chirurg. tom.* i.) Most surgeons in this country think otherwise; they put leeches on the inflamed skin, and even scarify the dilated vessels of the conjunctiva in cases of ophthalmy, as we think, with decided good effect. It is also an incontrovertible truth, that bleeding is generally more effectual, the nearer the evacuation

is made to the seat of the inflammation. It is to be regretted, indeed, that our inability to draw away a sufficient quantity in such a situation, often constrains us to practise general bleeding, by which we counteract the local complaint at the expense of the whole system.

3. The excretions are to be promoted, and the bowels kept open with aperient beverages, mild laxatives, such as the neutral salts, and with clysters. Drastic purges, by their irritation on the constitution, almost always prove hurtful. In some cases, antimonials are proper.

4. The patient is to be advised to take cooling drinks, like lemonade, and acidulated barley-water.

5. Perfect repose, both of body and mind, is so essentially requisite, in all cases of inflammation, as to need no comment.

6. The topical applications are often of the relaxing emollient kind. Poultices, made of linseed-meal, are preferable to such as are composed of bread and milk, the latter being apt to turn sour, and acquire an irritating quality. When cataplasms are used, fomentations are frequently proper, as they have a great effect in diminishing the pain, in severe cases. For this purpose, flannels are to be dipped in a decoction of camomile-flowers, or of white

poppy-heads, then wrung, and laid very warm on the inflamed part.

7. Proper as emollients are, in many cases, they are certainly not so frequently beneficial as cold astringent applications. These tend to lessen the painful throbbing, and the afflicting sense of heat in the part so constantly complained of, while, by diminishing the increased action of the arteries, they must generally have immense effect in retarding the complaint. The evaporation which they keep up from the surface of an inflamed part, is as grateful to the patient's feelings, as it is serviceable in appeasing the severity of the symptoms. Soft linen is to be dipped in the saturnine lotion, put all over the affected parts, and kept constantly wet.

8. When the redness, swelling, heat, and pain, gradually subside, the inflammation is said to terminate in *resolution*. Sometimes when this favourable event does not happen, *suppuration* occurs, and an abscess is produced. In other still more violent instances, the parts become affected with *gangrene*.

LITHOTOMY.

1. The calculi, which are found in the urinary bladder, are not all formed in this recep-

tacle, some of them descending from the kidneys and ureters. Certain surgeons have supposed, that the production of such calculi essentially requires the existence of a centre, round which the calculous matter is deposited. When a foreign body gets into the bladder, it becomes the nucleus of a stone. Yet, frequently, no appearance, which would lead to the foregoing conclusion, is observable in the central parts of urinary calculi, though, indeed, a clot of blood, or bit of thickened mucus, may be conceived to form a nucleus, and afterwards disappear. However this may be, calculi of the bladder are subject to great variety, in regard to their number, size, shape, density, composition, and the manner in which they lie in this organ. There may be only one, or many. In the last circumstance, they are always of smaller size, and their magnitude seems to be less in proportion as they are more numerous. The cases, in which there is only one stone, compared with those in which there are more, are stated to be as three to one. Sometimes, two calculi are met with, and the number ascends from three to sixty, and upwards. Their size varies, from that of a pea to that of a cocoa-nut. Fourcroy's museum, and that of the Ecole de Medecine at Paris, exhibit calculi, which filled the whole

cavity of the bladder. However, their ordinary size is from that of a pigeon's to that of a hen's egg. The differences of their shape are innumerable. Most of them are oval, and more or less flattened; their surface may be smooth and rounded, or unequal and rough. Calculi, which are full of asperities, must greatly irritate the bladder, and excite acute pain. The generality of urinary stones are hard and resistent; sometimes they crumble to pieces on the least pressure, and are converted into mere grits. The learned investigations of Fourcroy and Vauquelin have proved, that the uric acid, the urate of ammonia, the phosphate of lime, the ammoniaco-magnesian phosphate, the oxalate of lime, silica, and a particular modification of animal matter, are the materials of which calculi are formed.

2. Stones in the bladder usually lie quite loose in the cavity of this organ, their situation being determined by their own weight, and the contractions of the viscus in which they are contained. In a few examples, they are found to be adherent to the bladder, and to be fixed in the particular place where they happen to be situated. This state of a calculus may arise in three manners: The stone may have been formed in a pouch, consisting of a pro-

MAHARAJA SERFOGI'S SA... THE TANJORE MAHAL...

trusion of the lining of the bladder, between the fasciculi of its muscular fibres. The calculus may occupy that portion of the ureter, which glides obliquely between the coats of the bladder. Lastly, the stone may have its irregular surface so connected with the parietes of this organ, by means of a fungus, that it can only be separated by force.

3. The urine of the human subject contains a peculiar acid, which is so disposed to become a concrete, that, common as urinary calculi are, it is rather to be wondered at, that they are not still more frequent. The stone in the bladder is a rare disease in hot countries, like Spain and Africa, and in very cold parts of the world, such as Sweden. In the temperate zone, the disease most frequently occurs in cold damp countries like England and Holland. The inhabitants of the northern departments of France are said to be oftener afflicted, than those of the southern provinces. Persons in good circumstances, and those who eat indigestible food, are reckoned more liable to the disorder than others. Children and old people are more frequently afflicted, than persons of other ages, and men much oftener labour under the complaint than women.

4. The presence of a calculus in the bladder creates pain, and interrupts the flow of the

urine. These ambiguous symptoms may give rise to suspicions; but the practitioner can only be convinced of the nature of the disorder by sounding the patient, that is, by introducing a metallic instrument through the urethra into the bladder, so as actually to hear and feel the metal strike against the stone. The pain, originating from the existence of a calculus in the bladder, has the peculiarity of particularly affecting the extremity of the penis. At the glans, a tickling sensation is experienced, the acuteness of which increases from day to day, and gives patients, especially children, a habit of frequently pulling forward the prepuce, by which means it becomes considerably elongated. The pains are more severe, in proportion as the stone is large and rough. They are also intolerable just at the moment when the patient has done making water, at which period, no doubt, the bladder embraces the foreign body with some force. The suffering is increased by every kind of violent exercise, particularly by walking over irregular ground, riding on horseback, or in a carriage. These causes must make the stone move about, and greatly irritate the various points of the bladder, against which it is thrown. It is not uncommon for a patient, after such exercises, to void from the urethra

some drops of blood. There is a frequent inclination to make water, and the discharge of the urine is attended with a sensation of warmth, which becomes almost burning about the glans penis. The evacuation is sometimes suddenly stopped, and the patient in vain tries to complete it; nor can he succeed, till after putting his hand on the perineum, moving himself about, lying down, or, in some way or another, changing his position. This symptom indicates, that the stone occasionally falls against the orifice of the bladder. The continual irritation of the calculus affects the rectum. The patient feels a frequent desire to go to stool, and the efforts, which his imaginary want urges him to make, bring on, in numerous instances, a swelling of the hemorrhoidal vessels, and a prolapsus ani. At length, the pain becomes more incessant and excruciating, the calculus increases in size, and, pressing on the lower part of the bladder, creates an afflicting sensation of weight about the rectum. The evacuation of urine is attended with more and more difficulty. The coats of the bladder become inflamed and thickened; its inner surface ulcerates; the urine is mixed with blood and pus; hectic symptoms come on; and the patient is carried off. On examination after death, the bladder

is found indurated, thickened, and contracted. The fatal termination happens at various periods, in different cases. Persons have been known to remain ten, twenty, and even thirty years with stones in their bladder, and yet have not suffered such pain as led them to submit to lithotomy. What is more curious, very large rough stones have existed in the bladder, without giving rise to any symptoms, which led to the suspicion of the disorder.

5. As very similar symptoms may arise from other complaints, surgeons make it a constant rule never to infer, that a calculus is positively contained in the bladder, nor presume to perform lithotomy, before they have introduced a sound, and actually felt the extraneous body. A wise maxim also prevails, which is, always to be assured of the presence of the stone, by sounding at the time when the patient is brought forth to be operated on. When the calculus cannot be satisfactorily felt at this period, the operation is unwarrantable.

6. Lithontriptics, either as internal medicines, or injections into the bladder, have often excited the confidence, and as often baffled the expectation of the world. The desire of getting rid of a distressful disease, and of evading a formidable operation, has made men listen to schemes, which seem

never to have been attended with unequivocal success. It has, indeed, been proved by Fourcroy and Vauquelin, that a lixivium of potassa, or soda, not too strong to be swallowed, softens and dissolves small calculi, composed of the uric acid, and urate of ammonia, if they are left in the liquid a few days. They have shown, that a beverage, merely acidulated with nitric, or muriatic acid, dissolves with still greater quickness calculi, formed of the phosphate of lime, and of the ammoniaco-magnesian phosphate. They have made out, that calculi, composed of the oxalate of lime, which are the most difficult of dissolution, may be softened, and almost quite dissolved, in nitric acid, greatly diluted with water, provided they are kept in the mixture a sufficient time. As Richerand remarks, these discoveries might not be useless, if the chemical composition of the calculus were always known, and the bladder could bear the introduction of these active liquids into its cavity.

7. Lithotomy, or the operation of cutting into the bladder, and extracting the stone, has been executed in an immense variety of manners. We shall here only describe the method usually adopted in England; the plan preferred in France; and the manner of making the

opening into the bladder altogether with a scalpel.

8. Some practitioners prepare their patients for lithotomy, by making them avoid all exercise for a few days previously, giving them one or two purgatives, putting them into the warm bath the evening before, and emptying their rectum with a clyster just before the operation.

9. In order to be cut for the stone, the patient must be placed upon a firm table; a strong doubled band is to be fastened with a noose round each of his wrists; he is now to be directed to take hold of his feet with his hands, the palms being applied to the insteps, and the fingers to the soles; then, with the ends of the band his feet and hands are to be tied together in the foregoing position. An assistant, standing on each side, is to press the patient's knee outwards, while two other attendants, standing near the patient's shoulders, are to take hold of his arm, and hinder him from moving about too much.

10. The *lateral operation*, as it is termed, is that, which is commonly practised in this country. The staff is to be first introduced through the urethra into the bladder, and its handle committed to the care of an assistant, who is to hold it firmly, and incline it towards the patient's navel, in order to make the con-

vexity of the instrument prominent in the perineum. The surgeon, with a common scalpel, is first to make an incision, which is to begin on the left side of the raphe of the perineum, about two thirds of an inch in front of the anus, and be continued obliquely as far as the middle of the space, which lies between this outlet, and the tuberosity of the ischium. The parts to be divided in the first incision are the skin and fat of the perineum, the erector penis, accelerator urinæ, and transversus perinei muscles, with the anterior fibres of the levator ani. The operator feeling the staff, is to cut through the membranous part of the urethra into the groove of the instrument, with the guidance of which groove he is freely to divide the parts nearly as far as the neck of the bladder. He is then to put the beak of the cutting gorget carefully in the groove of the staff, and taking hold of the handle of the latter instrument, he is to bring it forwards so as to make the direction of the further end of the groove incline more upwards in the axis of the bladder. The gorget, with its beak in the groove of the staff, is now to be steadily pushed into the bladder, whereby the requisite division of the neck of this organ, and of a part of the prostate, will be effected. The forceps are then to be introduced into the cavity

of the bladder, and the gorget is to be withdrawn. In endeavouring to get hold of the calculus with the forceps, no roughness, nor violence, is justifiable. They should not be awkwardly opened and shut, and thrust about, without any fixed design. The first object is to use them as a probe for ascertaining the position of the stone, and this being done, a gentle attempt is to be made to grasp the extraneous body with their blades. The rough employment of the forceps may induce a perilous inflammation of the bladder and peritoneum, and may break the stone, whereby its complete extraction may be prevented. In drawing out the calculus, the surgeon is not to drag it forcibly through the wound, as this method would create a dangerous degree of laceration. On the contrary, when resistance is experienced, the forceps and stone are to be turned, when the change in the position of the foreign body may render its exit quite easy. It is always better to enlarge the wound with a knife, than tear the parts in pulling out the stone; and so unsatisfactory an occurrence is purposely breaking the calculus, with instruments for that intention, that a dilatation of the opening in the bladder should always be preferred, if likely to prove effectual. When the stone is either accidentally, or designedly,

broken, the patient must not be put into his bed, before the surgeon is certain, that no more of the calculous fragments are remaining behind in the bladder. Leaving any piece of the stone there would in all probability lead to a return of the former sufferings, which would increase as the calculus became larger. A mild method of getting out any fragments, is by injecting moderately warm water with a syringe. Large pieces will generally require the forceps, or scoop. Lastly, before taking the patient off the table, the surgeon is to introduce his finger through the wound into the bladder, with the utmost gentleness, and assure himself, that no calculous matter remains in that organ. Even when a calculus comes away quite unbroken, a careful examination must be made, whether other calculi exist. When they do, they are to be immediately extracted.

11. The arteries, liable to be cut in the lateral operation, are that running to the bulb; the lower branch of the internal pudendal, known by the name of the perineal artery; and lastly, the trunk itself of the internal pudendal. The perineal artery is that which is most frequently wounded; the artery of the bulb is not so often cut; and the trunk of the internal pudendal generally escapes, in consequence of its lying closely under the rami of the ischium and os

pubis. When the hemorrhage proceeds from the perineal artery, it is more or less considerable, in proportion to the very variable size of this vessel in different subjects. The blood issues from a point near the lower angle of the incision, and from the inferior part of its external lip. When the artery of the bulb is cut, the blood does not flow so profusely, and comes from the upper angle of the wound. When the internal pudendal itself is wounded, a copious hemorrhage happens from a deep point of the outer side of the incision. The artery of the bulb can only be cut by beginning the incision too high, which is a material fault in operating, as the opening into the bladder not being then made as direct as possible, much difficulty is apt to be experienced in extracting the stone. The commencement of the wound should never be more than two thirds of an inch from the anus. The trunk of the internal pudendal can only be wounded by carrying the incision to an unreasonable extent, and in a direction too much inclined towards the rami of the ischium. Nothing can be a greater error than preferring a gorget, with its edge turned obliquely upwards. An incision in this direction is, of all others, the most apt to injure the foregoing vessel, while, owing to the manner in which the rami of the ischium

and pubes incline upwards and inwards, a sufficient opening can scarcely thus be made for the extraction of a stone of much size. Pouteau, in censuring the plan of commencing the incision too high, observes, "Pourquoi étendre l'incision du coté de la symphyse du pubis, puisque la pierre doit étre extraite par la partie, qui correspond au plus grand écartement de ces os?" In order to stop the bleeding from the trunk of the internal pudendal, cannulæ, wrapt round with lint, have been introduced into the wound, with a view of compressing the mouth of the artery. Boyer is said to have suppressed the hemorrhage, in several instances, by introducing deeply into the wound a large dossil, round which is tied a ligature, the ends of which being separated, are to be forcibly tied over a second dossil. The constriction tends to draw outwards the first dossil, at the same time that it propels inwards that which is more external.—(*Richerand, Nosograph. Chirurg.* tom. iii. p. 533, edit. 2.) Secondary hemorrhages sometimes occur in old debilitated subjects several days after the operation, and may prove fatal. They require the same treatment as the foregoing bleeding, though, notwithstanding the most skilful compression, the blood will often continue to ooze

from the sides of the wound, from day to day, till the patient falls a victim.

12. Inflammation of the bladder and abdominal viscera is the most common and serious danger, to which lithotomy exposes the patient. It is most particularly to be apprehended, when the patient is plethoric and robust, when the operation has been long and difficult, or when the bladder has been bruised by the reiterated introduction of the forceps, for the purpose of taking out several calculi, or the fragments of a large stone, that has been broken. Occasionally, the inflammation succeeds the operation, when this has been executed in the most expert and successful manner. The affection commences in the bladder, and thence is propagated, by means of the peritoneum, over the whole abdomen. Copious bleeding, and putting the patient several hours in the warm bath, are the principal means of resisting this perilous kind of inflammation. They should be adopted immediately the approach of the complaint is evinced by the least pain in the hypogastric region. When the patient is out of the bath, his abdomen should be covered with emollient fomentations.

13. In France, lithotomy is mostly performed with the lithotome caché, which is a knife, concealed in a sheath, out of which the blade

springs on touching a particular part of the instrument. The distance to which the blade is capable of coming out, may be increased, or diminished, at the surgeon's option, according to the extent of the wound, which he wishes to make. This knife was the invention of the celebrated Frère Cosme. Though its construction is complicated, the manner of using it is simple. The patient being placed as in the lateral operation, and a staff introduced, the surgeon, with a scalpel, is to begin the first incision on the left side of the raphe of the perineum, about ten lines in front of the anus. This cut is to be continued obliquely downwards and outwards as far as the centre of a line extending from the anus to the inside of the tuberosity of the ischium. The external incision is to divide the integuments of the left side of the perineum, the accelerator urinæ, the erector penis, the transversus, and the front fibres of the levator ani. These parts having been cut, the index finger of the left hand is to be introduced into the left angle of the wound with its radial side downwards. The right edge of the groove of the staff is to be placed between the nail and skin at the end of the finger. The point of the scalpel is to be conducted into the groove of the staff along the nail, which faces the left. The

index finger is now to be turned, in order that its extremity may press upon the point of the knife, which all along is to be held with the right hand like a writing pen. The urethra is then to be slit open to the extent of five or six lines. The nail of the left index finger is next to be placed in the groove of the staff, and is to serve as a means of guiding the end of the lithotome into that groove. After the latter object has been accomplished, the finger is to be withdrawn; the surgeon with his left hand is to take hold of the handle of the staff; and, by one simultaneous movement, he is to raise the two ends of the instruments together towards the symphysis pubis, by which means the lithotome will be easily conducted into the bladder. The entrance of the lithotome into the cavity of this viscus will be indicated by the cessation of resistance, and the freer issue of the urine. The end of this instrument is in contact with the cul-de-sac extremity of the groove of the staff, and is to be disengaged by a slight lateral movement. The staff is now to be withdrawn. The operator, with his left thumb and index finger, is to take hold of the lithotome about the place where its sheath and handle meet. He is to conduct the instrument under the symphysis pubis, turning the edge downwards

and towards the left side of the perineum, in the direction of the external incision. On touching a lever, the blade of the lithotome quits its sheath, when the instrument is to be drawn out horizontally. Thus the membranous and prostatic parts of the urethra are cut, together with the prostate gland and neck of the bladder. The forceps are to be introduced, and the rest of the proceedings resemble such as have been described, in speaking of the lateral operation.

14. The serious mischief, which has occasionally been produced by the gorget slipping away from the staff, and the inability of the first of these instruments to make an opening into the bladder, of sufficient size for the easy extraction of large stones, have led several distinguished surgeons to give a preference to performing all the requisite incisions with a common scalpel. The first cut is to be made in the same way as in the operation with the gorget. The surgeon is to cut into the groove of the staff, through the membranous part of the urethra; and then, keeping the back of the knife in the groove of the staff, the division of the prostate and neck of the bladder is to be effected, by moving the knife horizontally. Then the necessary incision in the bladder is to be made by moving the knife downwards and

outwards. The forceps, guided by the fore-finger of the left hand, may now be easily introduced, for the purpose of taking out the stone.

NECROSIS.

Necrosis denotes the same disorder, with regard to the bones, as mortification does in relation to the soft parts. The dead piece of bone, like a slough, becomes an extraneous substance in respect to the rest of the machine. Nature makes an unremitting effort to throw it off; she renders it insulated among the adjacent parts, just as she does a slough in cases of sphacelus; and she fixes the limits between the dead and living portions. Strictly, the death of any piece of a bone, however small and superficial the dead part may be, is a necrosis. But, in this work, we can only consider the more formidable cases, in which the distemper is deeply seated in a long cylindrical bone, and is connected with an injury of the medullary membrane. In this example, the exterior of the bone continues to live, while the deeper laminæ, which are nearest the medullary canal, are deprived of their supply of blood, and perish. The outer layers of the bone, receiving a due quantity of blood through the vessels,

which are transmitted to them through the periosteum, inflame and swell, a separation is established between the dead and living portions, and purulent matter collects between them. A necrosis, thus produced in the middle of the long bones, never extends to their articular surfaces. The external bony laminæ form round the dead portion a canal of greater or lesser diameter, while the increased size of the bone, and the vast projection of its processes, occasion so considerable an alteration in its shape, that it can hardly be recognised as an original part. As the disorder advances, the pus, collected in the place where the separation is accomplished, becomes more and more copious, very little of it being taken up by the absorbents. In this circumstance, it presses against the external laminæ which compose the bony canal, and leads to the formation of apertures in it; which become fistulæ, after an opening has been made, either by art or nature, in the abscess under the skin. A probe may be introduced, through such a fistula, so as to touch the dead portion of bone; whereby the surgeon can often discover how far the process of separation has advanced. When the dead piece is moveable in the canal formed by the external bony lamellæ, it no longer has any connexion with the living bone. The disease

has now attained that state, in which art may be of essential service, by freeing the system of an extraneous substance, which nature unaided cannot expel. Many months, and even years, may elapse, ere the case has made the foregoing progress; and, until this happens, a surgeon can do little more than await the opportunity of being materially useful. Experience has proved, that, in this stage of necrosis, it is not in our power to accelerate the operations of nature. The separation of the dead bone cannot be expedited by any topical applications whatsoever, either emollients or stimulants; unless, indeed, it be true, that, in this instance, as well as in others, the action of the absorbents may be quickened, by applying a blister, and keeping it open with the savine cerate. The production of the osseous case, which includes the dead bone, has been erroneously referred to the separation of the periosteum from the latter, and to a deposition of new bone from this membrane. Scarpa and Richerand defend the opposite opinion.

TREATMENT.

1. The cure of every superficial necrosis is almost wholly the work of nature. In the necrosis which is deeply seated, a surgeon can only be useful, when the separation of the dead

piece of bone has been accomplished by an organic process. In some instances, nature alone has succeeded in bringing about the entire detachment and expulsion of the mortified portion. When a superficial necrosis is an effect of the venereal disease, mercury is necessary to stop the spreading destruction of the bone; though it is obvious that no medicine can have the power of restoring vitality to what has been already destroyed. Since no particular benefit can be derived from topical applications, in cases where a superficial scale of bone is exfoliating, our chief care should be not to use such as will do harm. Soft pieces of lint, covered with a pledget of simple ointment, or with an emollient poultice, where much irritation prevails, are the most proper dressings. Occasionally, the surgeon may try whether the dead part of the bone be loose, with his probe, or forceps; for, immediately it is sufficiently detached, it should always be extracted from the ulcer. When it is loose, but cannot be taken out, owing to the way in which it is covered with the flesh, an incision must be made, to facilitate its extraction. Rasping the exfoliating layer of bone is useless; inasmuch as it is as easy for nature to establish a line of separation under a thick as under a thin lamella of bone. Making perforations is hurtful, since

the new granulations shoot through the openings, and cover the dead bone, so as to engage it, and retard its separation.

2. When, after deep pains about the middle of a member, the skin inflames and abscesses form, followed by fistulous openings, from which a copious thin discharge takes place, and through which the irregular surface and mobility of the dead portion of bone can be distinguished; it is the duty of the surgeon to assist nature in her efforts to expel the extraneous body. It must be confessed, however, that the extraction of the dead piece of bone is a severe operation, when the diseased bone is, like that of the thigh, surrounded by a considerable quantity of flesh. Hence the surgeon must be careful not to attempt the proceeding, without being assured, that the process of exfoliation has completely loosened what he designs to extract. The operation consists in cutting down to the bone, in a situation where the soft parts have the least thickness, and where none of the principal nerves and vessels lie. Thus, for the humerus, the lower and outer part of the arm should be chosen; for the thigh-bone, the outside of the limb, &c. Having laid bare the bone, a due exposition of the dead piece must be made by cutting or sawing away the requisite portion of the external osseous

canal, in which it is included. A trephine is often used for this purpose, and the pieces between the perforations are cut away with a gouge. This part of the operation may be advantageously executed with Mr. Hey's saws. The dead bone is then to be extracted with a pair of forceps. By trepanning the lower part of the bony canal, the advantage is gained of being able to take away the dead bone, without removing so much of the living bone, as would otherwise be unavoidable.

OPHTHALMY.

1. Inflammation of the eye is divisible into many kinds. In almost all these cases, the tunica conjunctiva seems to be the part most affected; or, perhaps, the complaint is there only more conspicuous, by reason of the situation of that membrane, and the manner in which its beautiful white colour is lost in an universal redness.

2. A very slight irritation of the conjunctiva will bring on a redness of the eye, by making the blood flow in an increased quantity into the small vessels. Merely rubbing the eyelids a little roughly over the eyeball, will produce this effect. When a small extraneous substance

insinuates itself between the eyelids and globe of the eye, a still greater degree of redness is excited, together with some pain, and a sense of heat in the organ. This is the mildest form of acute ophthalmy. Whenever any extraneous substance thus gets between the eye and eyelids, it ought to be immediately extracted, if the increased secretion of the tears, which is brought on, does not of itself wash the irritating particle away. In fact, small insects, bits of dirt, &c. are in this way usually driven out. But when they cannot be thus got rid of, they must be speedily removed, in order to avert the ophthalmy, which their continuance would inevitably induce. The eye is afterwards to be bathed with a little warm milk and water.

3. Although these inflammations of the eye are generally easy of cure, it is often far otherwise, with respect to such ophthalmies, as are the consequence of excessive fatigue of the organ of sight, the influence of the atmosphere, a disordered state of the abdominal viscera, scrofula, syphilis, &c. Persons, who study much at candlelight, are frequently seen afflicted with either acute or chronic ophthalmies, the manifest cause of which is owing to the extreme fatigue of the eyes. The affection is here usually preceded by severe head-

achs, and the conjunctiva becomes gradually reddened and inflamed. Unless the exertion of the eyes is discontinued, the best remedies will not effect a cure. They may indeed palliate the complaint; but it will change from the acute into the chronic kind; the vessels of the conjunctiva will become relaxed; and a complete recovery will be more difficult. The treatment requires, that the eyes should have rest; and that they should be at first covered with soft emollient poultices, made of the pulp of roasted apples, and included in little muslin bags. The patient is to be put on low diet, and moderately purged with some mild purgative salts. Should the complaint not yield to this plan, a collyrium, composed of six ounces of rose-water and five grains of the sulphate of zinc, may be employed. The patient must be purged again; he must have blood taken from the arm, or temporal arteries; and three or four leeches are to be put upon the eyelids of each eye. When the complaint becomes much protracted, the strength of the collyrium is to be increased, and blisters must be applied behind the ears, or on the nape of the neck, and be kept open with savine ointment.

4. In very severe cases of acute ophthalmy, there is, in addition to the extreme pain, the swelling of the eyelids, &c. a vast projection of

the conjunctiva all round the transparent cornea. This state, which is termed *chemosis*, may prove fatal by the violent symptoms sometimes attending it. General and topical bleeding, scarifications of the swollen conjunctiva, low diet, and diluent drinks, are here urgently indicated.

5. Ophthalmy appears sometimes to be epidemic, and frequently has this character in constitutions, which are particularly subject to catarrhal complaints. The eyelids are said to be as much affected with œdema as inflammation, the redness pale, and the pain smarting. Topical applications, according to Richerand, have little efficacy. Sedative, pectoral medicines are proper; and a collyrium, containing a few grains of saffron, or the extract of opium, is to be used.

6. After an acute ophthalmy has yielded to antiphlogistic remedies, the eyelids yet continue a little swollen, and the conjunctiva has a pale red colour. This state is entirely owing to the relaxation of that membrane, and weakness of its vessels, circumstances to which the generality of chronic ophthalmies are imputable. The surgeon must now beware of persisting in the use of emollient and debilitating remedies. The eye should be bathed with a collyrium, containing sulphate of zinc, a little of the mu-

cilage of quince-seeds, and a few drops of camphorated spirit. The tinctura thebaica may be dropped into the eye, or the inside of the eyelids may be smeared with Janin's ophthalmic ointment, which Scarpa so highly commends; or, with the ung. hydrarg. nitrat. weakened.

7. Certain ophthalmies depend upon particular avocations. The eyes of nightmen are frequently inflamed, in consequence of being much exposed to noxious gases. It is the same with workmen employed at lime-kilns, or in breaking any calcareous matter, the minute particles of which get upon the conjunctiva, and become a cause of irritation. Cases of this kind may be easily relieved, by the patient leaving off his work for a time, and washing his eyes with any common collyrium.

8. When an ophthalmy arises from a disordered state of the abdominal viscera, the cause is indicated by a loss of appetite, nausea, bitterness in the mouth, a yellow furred tongue, violent head-ach, &c. The treatment demands the prompt exhibition of an emetic, and afterwards cooling and aperient medicines. Richerand advises the topical means merely to consist of a resolvent fomentation. Perhaps there is here no reason for making the local treatment at all different from that of ordinary cases of acute ophthalmy.

9. The scrofulous ophthalmy is seldom acute, almost always putting on the chronic form. The case may be suspected from the inflammation of the eye being attended with other symptoms more decidedly strumous. The treatment advised by Scarpa is, after having emptied the primæ viæ with small repeated doses of the kali tartarizatum and emetic tartar, to administer tonic medicines, such as bark and the volatile tincture of guaiacum, with æthiops mineralis, aqua calcis, &c. the doses of which last are to be taken in warm broth, every day, for several months. Sea-bathing, and rubbing the body with flannel, are also recommended. Mild astringent collyria, and the tinctura thebaica, are the best local applications.

10. The ophthalmy proceeding from a venereal cause, as well as the inflammation of the eyes, supposed to arise from the sudden stoppage of a gonorrhœa, and attended with a vast tumefaction of the conjunctiva, and a purulent discharge from the inside of the eyelids, are cases, in which collyria, containing the hydrargyrus muriatus, are often prescribed. Mercury is also given internally, though without much reason in the latter example. Another questionable measure is that, so generally advised, of irritating the urethra, in order to produce the gonorrhœa again.

11. The purulent ophthalmy of infants is likewise attended with great swelling of the conjunctiva, and a copious discharge of purulent matter from the inner surface of the eyelids. The chief remedy for this case is frequently injecting beneath the eyelids Bates's camphorated lotion, one dram of which is at first to be diluted with about two ounces of distilled water. The bowels are to be kept open with a little rhubarb, mixed with syrup of chicory, and the edges of the eyelids are to be prevented from becoming adherent together in the night-time, by smearing their margins with a little of the spermaceti cerate.

PARACENTESIS ABDOMINIS.

1. THE operation of tapping the abdomen, in ordinary cases of ascites, is now always performed about the centre of that part of the linea alba, which is between the navel and os pubis, instead of at the linea semilunaris, a place which can never be hit with certainty by the trocar.

2. Since the sudden removal of the pressure of the fluid is apt to bring on a dangerous syncope, surgeons make it a rule always to compress the abdomen, during the operation,

by means of a sheet, which is put round the patient, and drawn tight by two assistants, all the time the fluid is escaping through the cannula of the trocar.

3. The trocar is to be pushed on, till the resistance ceases, which circumstance indicates that its point has entered the cavity of the peritoneum. The cannula alone is now to be introduced a little further, at the same moment that the stilette is withdrawn.

4. When the fluid has been let out, the cannula must be taken out, and a bit of lint and emplastrum saponis put over the puncture. The compression of the abdomen is still to be kept up. Nor is the patient to be put to bed before the surgeon has laid a flannel compress, sprinkled with brandy, or camphorated spirit, over the abdomen, and applied a flannel roller round the body, with proper tightness.

PAROTIS.

1. The surgeon should always endeavour to bring about the resolution of every inflammatory swelling of the parotid gland, since abscesses of this part are apt to degenerate into troublesome sores, lead to salivary fistulæ, and occasion very deforming scars. The employ-

ment of the ordinary antiphlogistic remedies will not always avail in dispersing the inflammation; for, it is often indispensable to adapt the treatment to the cause of the complaint; as, when the inflammation of the gland is the consequence of bad teeth, the use of mercury, exposure to cold, &c.

2. An exception has been made to this rule of trying to resolve the inflammation, when the swelling of the gland is supposed to be critical, and has followed a fever. We have much doubt of the rectitude of this advice.

3. What has been named the angina parotidæa is also attended with a swelling of the parotid gland. It appears to be a disorder of the catarrhal kind, being often epidemical, and affecting persons who expose themselves to the damp. It does not seem to be contagious, as often only one person out of a large family is attacked. It seldom afflicts the same patient twice. It is mostly observed in young subjects, between the age of sixteen and twenty. A swelling, preceded by febrile symptoms, takes place just below one, or both the ears, soon affecting the whole of the parotid gland, and not unfrequently the glands under the jaw. With proper treatment, the tumor at length subsides, on the breaking out of a perspiration. The generality of surgical writers

forbid all attempts to repel this inflammation of the parotid gland by bleeding, purging, &c. as likely to induce perilous and fatal effects on the constitution. Such advice should not be received, as deserving of implicit belief. The testes are said to be apt to swell, on the tumor of the parotid gland subsiding. Sometimes, the parotid and the scrotum thus swell and subside again alternately several times. Occasionally the brain becomes affected. In certain instances, a wasting of the testicle is brought on. Hamilton records a case where the swelling of the parotid gland suppurated, and though a large quantity of matter was discharged, the abscess was exterior to the gland, and the sore healed up without trouble.—(*Trans. Royal Society of Edinb.* vol. ii.)

4. Richter condemns bleeding and purging in such examples, as rendering the affection of the testes and brain more likely to happen. Those evacuations are only allowable, when the pulse is hard and full, the fever considerable, and the pain and inflammation violent; a kind of case which is uncommon. Whenever there is constipation, clysters are to be employed.

5. Although the diagnosis of this disease is plain enough, when the case has been observed from its commencement; yet, if the patient

be first seen in the latter period of the disorder, when the testis is swollen, the swelling of the scrotum may be easily mistaken for a common hernia humoralis. Richter and other surgical authors seem to regard this error as very serious, by leading to such treatment as may do harm, or even prove fatal.

6. When an abscess takes place in the parotid gland, unattended with urgent symptoms, and accompanied with more or less induration around the matter, the making of a puncture is to be deferred, till most of the hardness has disappeared. When such delay is inadmissible, a very small opening should be made, and the dressing taken off as seldom as possible. Should these rules be deviated from, the abscess is apt to degenerate into an ill-conditioned ulcer, and leave behind a chronic induration, which is difficult to be dispersed. Sometimes, the presence of the matter produces various complaints, such as deafness, difficulty of breathing, or swallowing, &c. Here an early opening ought to be practised. In the Journ. de Médecine, vol. ii. a case is mentioned, where death was the consequence of the matter making its way, by the side of the trachea, into the chest.

7. In some instances, abscesses of the parotid gland are attended with most pressing symp-

toms, locked jaw, delirium, lethargy, apoplectic complaints, &c. Here the matter should be let out, on the very first perception of a fluctuation. Cases of this kind are usually a consequence of malignant fevers.

8. Petit had occasion to observe paralytic affections of the face, a distortion of the mouth, an ectropium, &c. follow the puncturing of parotid abscesses. These consequences were cured by the use of mineral baths.

9. Sometimes calculous concretions are met with in abscesses of the parotid gland. When these extraneous substances continue undetected, a fistula generally remains, or else, after the part has healed, fresh attacks of inflammation and suppuration are made on the gland. The repeated renewal of the inflammation in this manner, without any manifest cause, is enough to excite the suspicion of a calculus being present.

10. All abscesses of the parotid gland are apt to leave after them salivary fistulæ, which, however, are generally curable by compression, or a few touches of the argentum nitratum.

11. When the swelling of the parotid is of a scrofulous nature, suppuration occurs with great slowness. Here it is important to delay making an opening, till the surrounding hardness has decreased. Should a bad-looking

strumous sore still follow, antiscrofulous remedies will be required.

12. Chronic scrofulous swellings of the parotid are said to be particularly benefited by cicuta.

13. Some enlargements of the parotid, attended with considerable hardness, have been called scirrhi, though, certainly, they are not of a cancerous nature. Here the medicines may be tried, which are specified in our observations on Cancer. When such remedies fail, and the tumor occasions urgent complaints, the dangerous operation of cutting out the gland has been proposed, and even practised. (See Journ. de Med. tom. xlviii.) The suggestion has been made only to remove a part of the tumor with the knife, and destroy the rest with caustic; a mode, which, indeed, was successfully adopted by Desault. In general, the symptoms are not so urgent as to demand any operation, especially as the tumor rarely, if ever, degenerates into cancer.

PILES.

1. It is commonly supposed, that piles, or hemorrhoids, are varicous dilatations of the hemorrhoidal veins, and, possibly, in some instances, they may be of this nature. But, there can

be no doubt, that in many, and probably in most cases, they are formed by an effusion of blood under the lining of the rectum, the membrane alone of this intestine, and not the coats of the vein, forming the covering of the tumor. This statement seems to derive confirmation from the following circumstances. Piles are sometimes as large as a walnut, or an apple. It is scarcely conceivable, that a mere varix can attain this magnitude. Frequently, on cutting away piles, even of large size, little or no bleeding ensues. Were they dilatations of veins, a considerable hemorrhage would inevitably happen. A pile occasionally quite collapses, a thing which could hardly occur, were the tumor a part of a blood-vessel. Piles sometimes have various shapes, which the dilatation of a vein could not put on, and, after being removed and examined, they are found to have only one covering.

2. Some piles are situated quite on the outside of the anus; some are surrounded by the fibres of the sphincter; and others lie above this muscle. In the last of these cases, they seldom produce serious inconvenience; but, in the other examples, they are apt to occasion painful symptoms, when inflamed, or constricted by the sphincter ani.

3. Piles are denominated *blind*, when they do not habitually bleed; *open*, in the opposite circumstance. Hemorrhage is one of the chief grievances liable to attend this disease. The loss of blood often creates a general debility of the whole system, and actually endangers life itself. In this event, prudence dictates, that no more time should be devoted to palliative methods; but, that the operation of extirpating the tumors should be executed without the least delay.

4. Writers caution us not to remove piles, which are of very long standing, which make habitual discharges of blood, or, which have come on, after the subsidence of another more serious malady. The fear of bringing on a more dangerous affection is the reason of this doctrine, to which, however, few surgeons in this country attach much credit.

5. The general causes of piles are referred to circumstances, which operate by retarding and obstructing the return of blood through the hemorrhoidal veins. Hence frequent costiveness, and the lodgment of hardened feces in the great intestines, the pressure of the gravid uterus, and a sedentary life, are reckoned particularly liable to occasion the disease. It is clear, that these causes by no means prove, that piles are varices of the veins of the rectum,

since they account equally well for the effusion of blood into a sort of cyst, wholly composed of the membranous lining of that intestine.

6. When piles are neither large, numerous, nor particularly troublesome, it is at the option of the patient, whether they are to be removed, or not. In case he should choose rather to put up with the disease, than submit to any operation, it behoves him, of all things, to avoid costiveness, a sedentary life, eating hot spicy dishes, and all excesses with the bottle. These circumstances strongly tend to aggravate the state of his complaint.

7. When hemorrhoids are painful and inflamed, this state is sometimes owing to one or two of the tumors being tightly constricted by the sphincter ani. Here, prompt relief may often be afforded, by just pushing the swellings a little higher up, beyond the grasp of this muscle. In other instances, when the tumors are quite external, and yet painful and inflamed, the surgeon may apply to the fundament linen, wet with the lotio aq. litharg. acet. and kept on with the T bandage. Or, he may apply to the parts the fomentum gallæ. When the case is severe, leeches are first to be applied to the swellings, or a topical evacuation of blood may be obtained by puncturing the tumors with a lancet. After the bleeding is over, the following ointment is to be used for smearing the ex-

crescence: ℞ Gallarum pulv. ℨij. Camph. ℨſs. Adipis suillæ præpar. ℥j. Misce. The bowels are, at the same time, to be kept well open with mild laxatives, electuaries containing cream of tartar, sulphur, &c.

8. When the patient is often seriously afflicted with these painful attacks; or when the tumors are so large, or numerous, as to create almost continual annoyance, preventing active exercise, and even rendering the expulsion of the feces more or less difficult; it is the duty of the surgeon to advise the extirpation of the disease.

9. In general, the most eligible mode of removing piles is with a knife. The apprehension of hemorrhage after the operation is, for the most part, unfounded. When the tumors are on the outside of the sphincter, the bleeding need excite no alarm, as it cannot well be considerable, and were it ever so profuse, its situation is such as to be quite under the control of surgery. Some piles are only protruded at the anus when the patient strains; and, of course, when it is wished to remove them, he must be requested to take this method of making them descend, while he sits over a bidet filled with warm water. When the swellings are down, the surgeon is to take hold of them with a tenaculum, and cut them away.

The bleeding is more likely to be profuse after the excision of these internal piles. The injection of a cold solution of alum into the rectum, however, will rarely fail to stop the hemorrhage: if it should be insufficient, distending the rectum with sponge will be found effectual.

10. The plan of extirpating piles with a ligature came into practice from a fear of the hemorrhage, which might follow the use of a cutting instrument. But, since experience has proved such apprehension to be generally groundless, tying hemorrhoids is, perhaps, only to be preferred, when the tumors are not merely large, but obviously distended with a good deal of blood. When they have a firm fleshy feel, the bleeding need never be feared, how large soever they may be. Nor is there any reason for dreading it, when the piles are externally situated, even though they may be plainly seen to be turgid with blood. It is then to internal piles, which, on being protruded, appear to be highly distended with blood, that the ligature seems applicable. Tying piles is much more painful than cutting them away, and has occasionally brought on symptoms of so alarming a kind as to render the immediate removal of the ligature indispensable.

RETENTION OF URINE.

1. A RETENTION of urine may depend, either upon a diminution, or total abolition, of the contractile power of the bladder, or upon some obstacle made to the passage of the fluid outwards through the urethra. The malady is known by the several appellations of ischuria, strangury, and dysury, according as the evacuation may be either totally impeded, or only attended with various degrees of difficulty.

2. Paralysis of the bladder is always followed by an accumulation of the urine in this organ, which becomes distended, rises above the pubes, and even ascends in extreme cases as high as the navel. As insensibility is frequently joined with a loss of the power of contraction, patients are only apprized of the nature of their disorder by a disagreeable sensation of weight about the region of the os pubis. When the distention is excessive, and the bladder absolutely cannot contain more urine, some of this fluid occasionally dribbles away from the urethra; but, no relief is the consequence, since the bladder still continues dilated in the utmost degree. In consequence of the distention, the coats of the bladder inflame, and fever comes on, characterized by the urinary and ammoniacal smell exhaled from

the patient's body, by the yellowish unctuous quality of his perspiration, the violent thirst which he experiences, the dryness and redness of his tongue and throat, the frequency and irritability of his pulse, and the doughy flaccid state of the cellular membrane. According to Richerand, when a person falls a victim to this disease, and an examination is made after death, the texture of the whole body is found impregnated with urine. The bladder is found highly inflamed, and frequently exhibits gangrenous appearances at several points. In many instances, the inflammation extends to the other abdominal viscera. The causes of a paralytic affection of the bladder are exceedingly numerous: old age, excessive debility consequent to fevers, a considerable distention of the parietes of the bladder, injuries of the brain and medulla spinalis, &c. Retaining the urine too long in the bladder, after an inclination to make water is felt, has a powerful tendency to induce the disease, by occasioning a distention of the bladder, and gradually destroying the contractile power of this organ. Frequently, when a person has long delayed satisfying the calls of nature, he experiences considerable difficulty in his next attempt to make water. The fluid is slowly discharged, and the whole of it can scarcely be got rid of.

In fact, when the pernicious habit is acquired of retaining the urine, a long while after the first inclination to void it is felt, the bladder soon loses the power of completely contracting itself, and, at last, cannot expel any of its contents at all. It is a prudent maxim, therefore, never to defer making water, after the inclination to do so is felt. Persons in the habit of deviating from this rule, expose themselves to the risk, not only of having a paralysis and inflammation of the bladder, but, also, of being afflicted with calculi, by the precipitation of certain matter, which abounds in the urine, and has a great disposition to concrete. A paralysis of the bladder is attended with a retention of urine, and a round tumor above the pubes. The swelling subsides on the urine being discharged by the introduction of a catheter. At a particular period of the disorder, some urine is involuntarily voided; but, it is only the redundant quantity which comes away in consequence of the elasticity of the coats of the bladder, and the compression made upon this viscus by the diaphragm and abdominal muscles.

3. The foregoing causes of a retention of urine affect the bladder itself, and deprive it of its contractile power, which is so essential to the expulsion of that fluid. The follow-

ing causes, as Richerand observes, all occasion mechanical impediments to the passage of the urine outwards from the bladder. Thus the orifice of this receptacle may be closed by the inflammatory swelling of its neck, the presence of a fungous tumor, a varicous state of the blood-vessels, a morbid enlargement of the prostate gland, the pressure of a neighbouring swelling, a calculus, or a coagulum. These circumstances may impede the urine from getting into the urethra; but, the obstacle may exist in this canal itself. Strictures, indeed, are by far the most common causes of a retention of urine. The orifice by which the bladder communicates with the urethra is so small, that we cannot wonder at its being sometimes rendered impervious by inflammation. In certain persons, who are robust, plethoric, and affected with hemorrhoidal complaints, any excess in drinking, venery, or exercise, is enough to induce this form of the disease. Cantharides are well known to be capable of making the neck of the bladder inflame. Virulent gonorrhœas sometimes have the same effect. A retention of urine, depending upon an inflammation of the cervix vesicæ, is evinced by the acute pain accompanying the difficulty of making water, the sense of great heat about the neck of the

bladder, and the existence of fever. The detection of fungous tumors, and of a varicous state of the cervix vesicæ, must generally be difficult. Such a disease can only be suspected by the particular feel, which the sound, or catheter, communicates on its entrance into the bladder. A diseased enlargement of the prostate is one of the most afflicting causes of a retention of urine. Here the difficulty of expelling the urine is said to be rather owing to an alteration in the course of the urethra, than to a diminution of its diameter.

4. In every case of retention of urine, two indications present themselves: the first is, to procure a discharge of this fluid; the second is, to remove the obstacles to its expulsion. The first object is sometimes fulfilled by drawing off the urine with a catheter. This instrument is a long silver tube, which is curved at one of its ends, and terminates in a conical beak, on each side of which there are small apertures made for the passage of the urine. The other extremity of the catheter is straight, and generally has two small rings, by means of which the instrument may be fixed, when it is wished to leave it any time in the urethra. The length of catheters varies from about seven to eleven inches. The surgeon should also be provided with catheters of different

thicknesses and curvatures, since an instrument, suitable for a child, would not do for an adult. To the hollow of the catheter, a stilet, or piece of wire, is adapted, which gives firmness to the tube, and must be withdrawn in order to let the urine escape. The instrument is introduced in the following manner: The patient may sit in a chair, or on the side of his bed, leaning back against some pillows and attendants. The surgeon having smeared the catheter with some oil, is to take hold of the penis with the thumb and index finger of his left hand, on each side of the corona glandis, is to draw back the prepuce, and introduce the beak of the instrument into the orifice of the urethra, the concavity of the tube being towards the patient's abdomen. The catheter is to be gently pushed forwards, at the same time that the surgeon draws, as it were, the penis over it. The great art of introducing this instrument, says Le Dran, is to contrive a kind of concert between the hand which holds the penis, and that which holds the catheter, so that, alternately, the catheter may be pushed on, and the penis drawn over it. As soon as the beak of the catheter has arrived under the symphysis pubis, the handle should be gently and slowly carried forwards from the abdomen, and depressed by a circular

movement, by which artifice the beak will be slowly inclined upwards, and directed into the bladder. Some practitioners prefer introducing the catheter at first with its concavity downwards, till the beak has arrived under the arch of the pubes, when they turn the convexity downwards, by making the handle describe a semicircular movement, revolving, as it were, on the beak, which is to be kept as motionless as possible in the perineum. When much difficulty is experienced in passing the catheter, various proceedings have been tried with a view of facilitating the operation. Catheters of small diameter, but very strong by reason of the thickness of the metal, have been tried. The index finger of the left hand has been introduced into the anus to guide the beak of the instrument. The patient has been bled, and put into the warm bath; a method, which powerfully obviates any state of spasm, which may resist the passage of the instrument. Hunter sometimes found it useful to introduce a very small bougie, just before attempting catheterism. In cases of strictures, virulent gonorrhœa, abscesses about the anus, &c. the retention of urine often depends on a spasmodic affection of the urethra, and admits of being relieved by bleeding, the warm bath, and opiates. In such examples, the attempt

to introduce the catheter should be avoided, if possible, as it invariably increases the irritation in the urethra. In many instances, a flexible, elastic, gum catheter is better than a silver one. Perhaps, in all cases accompanied with spasm and inflammation, and where it is requisite to leave the tube for some time in the urethra, the former should be preferred.

5. The paralysis of the bladder, and retention of urine, arising from venereal excesses, can only be cured by continence and a temperate life. The paralysis of the bladder depending upon the pressure of fluids on the brain in apoplectic cases, and that originating from injuries of the spinal marrow, and attended with a similar affection of the lower extremities, being mere symptoms of another more serious affliction, it is against this last that the remedies should be directed. The paralysis of the bladder, proceeding from a protracted retention of the urine, generally gets well of itself, if the patient is young and undebilitated; but that which is the effect of old age is more difficult of cure. The treatment consists in prescribing diuretic medicines, directing the hypogastric and lumbar regions to be rubbed with liniments, exhibiting cantharides, and applying a blister to the sacrum. In such a case, electricity promises

to be useful. When a protracted retention of the urine has brought on inflammation of the bladder, the warm bath, fomenting the domen, and bleeding, are proper. Here, if the catheter has been used, it is not to be left in the urethra, lest its extremity irritate the bladder, and increase the inflammation. Indeed, in all paralytic affections of this organ, it is better to introduce the catheter two or three times a day, than leave it in the urethra, as by this means the bladder will more quickly regain its tone. In tedious cases, the patient soon learns the art of introducing the instrument, without the aid of the surgeon.

6. Bleeding, the warm bath, mucilaginous drinks, and anodyne clysters, are proper, when inflammation of the neck of the bladder exists, whether the complaint be owing to the abuse of cantharides, the injection of an irritating liquid into the urethra, excess in drinking or venery, rough exercise on horseback, &c.

7. The obstruction to the passage of the urine, arising from an enlargement of the prostate, requires the employment of the catheter, and can only be radically cured, by obviating the original disease; a thing which is generally impracticable.

8. The catheter is likewise the only means of relief, where a retention of urine depends

upon a fungous tumor, or a varicous disease of the neck of the bladder. The difficulty of detecting the presence of a fungus with sufficient certainty, would prevent any operation for its extirpation.

9. The retention of urine, originating from obstacles which are moveable, and situated either about the neck of the bladder, or in the urethra, requires the employment of the catheter, or the extraction of the extraneous substance hindering the escape of the urine. The instrument may push back a fungus, a coagulum, or a calculus, stopping up the orifice of the bladder; but when a stone lodges in the urethra, the extraction of the foreign body is the only mode of obtaining relief.

10. There are some retentions of urine, which may be deemed incurable, either because their cause is indiscoverable, or because it cannot be obviated. Such would be an exostosis of the os pubis, compressing the adjacent portion of the urethra, an example of which disease is recorded in the Mém. de l'Acad. de Dijon. Such would be a steatomatous tumor, situated in the cavity of the pelvis, behind the ossa pubis.

11. When a patient has suffered a total retention of urine for the space of two or three days, without any relief being derived from

the method of treatment, it becomes the duty of the surgeon to puncture the bladder, as the only means of averting inflammation and gangrene of this organ, an extravasation of urine among the bowels, or in the cellular membrane, peritonitis, and death.

STRICTURES.

SYMPTOMS, &c.

Some strictures of the urethra are entirely spasmodic, and are so unconnected with any alteration of structure in the membrane of that canal, that, if an ocular examination could be made, when the spasm had subsided, there would be no vestige of disease whatsoever. A permanent stricture is a kind of ridge, which arises from the side of the canal. Some have imagined, that strictures are usually of considerable extent; but Mr. Home has frequently examined the urethra, and ascertained, that, in general, a stricture consists only of the thickness of a single fold of the membrane of the canal, with an intervening portion of cellular membrane. The ridge ordinarily exists on every side of the urethra, and of course is circular; but there are cases where the projection is merely a segment of a circle.

All permanent strictures, which are not totally impervious, are also liable to contract still further by a spasmodic affection. Hence, we discern the reason why excesses, exposure to cold, &c. so often bring on retentions of urine in patients afflicted with the present disease. According to Mr. Home, strictures occur most commonly just behind the bulb of the urethra, at about six and a half, or seven inches from the external orifice. The next most frequent situation is about four inches and a half from the orifice. Strictures are also met with at three inches and a half down the canal, and sometimes almost close to the opening in the glans. In almost all cases, there is a stricture just behind the bulb, whether others exist or not. A stricture, in its early stage, seldom excites attention, the trivial diminution of the stream of urine occasioned by the disorder being overlooked. The disease is rarely noticed, till the expulsion of the urine is attended with difficulty, and this does not often happen, before the contraction has made considerable progress. The contraction at first advances very slowly, though afterwards quickly. New symptoms are now perceived. The urine is voided more frequently, does not pass without a considerable effort, attended with pain, and a straining continues after the

bladder is emptied. If the patient accidentally catches cold, drinks a glass of spirituous liquor, acid beverage, or punch, commits an excess in wine, or removes quickly from a warm to a cold climate, the urine will, perhaps, pass only in drops, or be entirely obstructed. Such causes induce in the contracted part a spasmodic action, by which the canal is rendered impervious. In many instances, the emission of the semen is more or less impeded. Very frequently, the disease is accompanied with a discharge from the passage.

CAUSES.

These seem in general to be various irritations operating on the urethra. A calculus in the bladder occasionally gives rise to a stricture, and this sometimes at a very early age. Diseases of the prostate have been found to produce strictures, a circumstance which is imputable to the irritation affecting the urethra. But, of all the causes, which occasion strictures, gonorrhœa is supposed to be the most frequent. Toying with women, and all excesses in venery, certainly have a strong influence in bringing on the disease. How much more powerfully such causes must operate on the debilitated irritable constitutions of warm climates, may be readily conceived. The use of astringent

injections, in the treatment of gonorrhœa, has been suspected as a cause of strictures; but, this point is yet a matter of doubt, though it deserves notice that Mr. Home himself has preferred giving up the employment of these injections, rather than run any risk of producing so distressing a complaint. External violence applied to the perineum, or penis, is recorded by authors as having been the occasion of strictures. The irritating effect of a blister on the urinary organs is also said to have caused the disease.

TREATMENT.

1. Strictures in the urethra are commonly cured by bougies, which, being smeared with oil, are introduced into the urethra down to the obstruction, and, if possible, through it. When a bougie of a certain size will not pass in this way, the attempt should be made with a smaller one. The instrument, after being introduced through the stricture, is to be worn, as long as no particular inconvenience is experienced from its presence in the urethra. The best time for wearing a bougie, is when the patient has an opportunity of keeping himself perfectly still. A bit of thread is usually tied round the piece of bougie left without the passage, and being fastened round the extremity of the penis, serves for keeping the bougie

fixed. A larger bougie is to be employed, in proportion as the yielding of the stricture may allow. In short, the cure is conducted on the principle of gradual dilatation. When the smallest bougie cannot be made to pass through the aperture of the stricture, it has been proposed to excite ulceration in the obstruction by making rather forcible pressure for some time, every day, with the point of a bougie. In order to prevent a return of strictures, the employment of the common bougie is not to be left off too soon, nor until one of large size will pass with facility into the bladder.

2. The treatment with common bougies having been found tedious, and the cure sometimes followed by relapses, surgeons have been led to adopt plans, which have for their object the destruction of the stricture. In the time of Ambrose Paré, bougies, smeared with verdigrease, alum, &c. were employed in the treatment of strictures. Wiseman used red precipitate for the same purpose. Hunter proposed the introduction of a piece of argentum nitratum down to strictures with a cannula, and an apparatus resembling a portcrayon. This suggestion subsequently led to a much more convenient method of applying this caustic to strictures, by means of armed bougies; which have a piece of the caustic so fixed in their extremities, that

laterally and behind it is every where surrounded by the composition of the bougies, while in front it forms a surface fitted for acting on the stricture. The exact distance of the obstruction, from the orifice in the glans, is to be first measured with a common bougie, on which an impression is to be made with the nail, just where the instrument begins to be uncovered by the glans. A mark is now to be made on the armed bougie, exactly at the same distance from its point, as the impression is from the point of the common bougie. When the mark arrives at the orifice in the glans, the surgeon knows that the surface of the caustic is then in contact with the stricture. Care must always be taken to have the common bougie fully as large as the armed one. The latter is to be oiled, passed quickly down to the stricture, and kept applied about a minute every other day. Mr. Whately arms his bougies by inserting a small bit of kali purum, about the size of a pin's head, in a little hole, made with a blanket pin, on the end of the bougie. The caustic is to be well pressed, and fixed in this situation, and then covered with a little hog's lard. This gentleman seems to regard strictures as occupying more extent of the urethra, than Mr. Home has represented. Therefore, as soon as the bougie, armed with the kali purum, has reached the anterior part of

the stricture, we are directed to let the instrument rest there a few seconds, in order that the caustic may dissolve. The bougie is then to be pushed very gently forwards, about one eighth of an inch, where it should again stop for a second or two. It is next to be carried forwards, in the same gentle manner, till it has got through the stricture. The particular feel, and the notch on the bougie, will inform the practitioner of this circumstance. The instrument is now to be drawn back to the anterior part of the stricture, and then pushed through it again, but without any stoppage. If much pain or faintness occur, the bougie is next to be taken out altogether; but, if not, it may be withdrawn a little way back, and once more pushed through the stricture as before. The kali purum is to be employed in this way, with intervals of about a week. Mr. Whately never applies caustic to strictures, till a smallish common bougie can be passed through them. It is difficult to determine the precise degree of praise, which ought to be conferred on the use of armed bougies. On one hand, their superior efficacy has been undoubtedly magnified by their advocates; on the other, their inconveniences and dangers have been equally exaggerated. For strictures, occupying a very limited extent of the canal, bougies, armed with the

argentum nitratum, may sometimes answer exceedingly well. We are convinced, however, that many instances occur which can be cured with greater ease and expedition by ordinary bougies. Nor is there any fact more certain, than that a general complaint prevails among surgeons, of their not meeting with the degree of success, which Mr. Home's publications have led them to expect, from the employment of armed bougies.

3. In bad cases, the urethra is apt to ulcerate between the neck of the bladder and the nearest stricture. The consequence is an effusion of urine in the cellular membrane of the perineum, scrotum, and penis, followed by suppuration and gangrenous mischief. The parts affected swell, and the tumor, from being at first soft, soon becomes inflamed, red, and excessively tense and painful. Mortification too often follows, and occasions ravages so deep, that, on the sloughs being cast off, the testicles, muscles of the perineum, and even the tuberosities of the ischium, are laid bare. Frequently, in this state, the patient dies. The grand means of preventing all this mischief is to make a free incision into the parts, which are the seat of the extravasation, as soon as the tumor begins. Thus, an outlet being made for the urine, a stop will be put to its becoming widely diffused

in the cellular membrane. The opening made in this way, or which spontaneously occurs, continues to give exit to the urine, and receives the name of fistula in perineo, the cure of which is to be ultimately accomplished by removing the strictures in the urethra.

TREPANNING.

1. The common design of the operation of the trepan is to relieve the brain from pressure, made either by an extravasation of blood, or a collection of matter under the cranium, or by a portion of bone, which is fractured, and beaten inwards. We may first briefly state, that the operation consists in sawing out one or more pieces of the skull. The instrument formerly employed for this purpose was named a trepan, which bore a resemblance to a common wimble; but, at present, the trephine is preferred, which, like the trepan, is a circular saw, and chiefly differs from that instrument in being fixed on a transverse handle, by which it is turned backwards and forwards by the pronation and supination of the operator's hand. As the trephine always unavoidably removes a circular piece of bone, of a determinate size, a thing which is not constantly desirable, Mr. Hey's saws may often be used with infinite advantage. They

will frequently effect the removal of a depressed portion of bone by a division of inconsiderable extent; and, certainly, all unnecessary destruction of the cranium, and exposure of the dura mater, must be in the highest degree hurtful and censurable. However, when blood is extravasated under the skull, making an outlet adequate to the free escape and entire removal of such fluid is always a consideration paramount to the preservation of the cranium, and the urgent nature of the danger frequently demands several perforations. The circumstances requiring the operation having been related, in speaking of Compression, a repetition would here be superfluous.

2. There are few parts of the skull, exposed to external violence, to which the trephine cannot safely be applied. However, the middle of the forehead is rather an inconvenient situation, on account of the manner in which the spine of the os frontis sometimes projects inwards. The division of the two tables would often be completed long before that internal prominent ridge was sawn, and hence the circle could only be taken out by breaking it away with an elevator. Not many years ago, surgeons were fearful of trepanning over the sutures and the longitudinal sinus. The moderns are warped by no such timidity, having

ascertained, that, in the event of this vein being injured, the hemorrhage from it is not difficult to stop, and knowing that sutures may have the trephine applied to them with perfect security. Whether the great lateral sinuses would bleed so dangerously as to make it unwarrantable to trepan over them, has perhaps not yet been learned. Surgical authors in general advise us not to apply the trephine in the situation of the frontal sinuses; and, certainly, considerable difficulty here presents itself to the operation. For, if the perforation be carried through the inner table in the same direction as through the outer one, the saw will inevitably injure the dura mater and brain, and the upper part of the circle will be cut through, long before the lower segment is completely divided. Mr. Charles Bell has proposed applying first a large trephine to the outer table, and then using a smaller one, which might be placed perpendicularly upon the inner table. It is a prudent maxim never to apply the saw within half an inch of the superciliary ridge of the frontal bone, as such an application cannot be essentially necessary, and the orbit might be injured. The groove for the large artery of the dura mater is situated on the inner surface of the anterior inferior angle of the parietal bone, and should

be avoided, if possible, on account of the bleeding, which would arise from an injury of the vessel which it includes.

3. In order to make way for the application of the trephine, it is necessary to divide the scalp, supposing an accidental wound, of sufficient size, and in the desired place, does not exist. The barbarous plan, however, of cutting away any of the scalp in this operation is now so completely abandoned, that we shall not dwell upon it. Surgeons content themselves with making an incision down to the bone, in the shape of the letter T, V, or C, and dissecting up the angles or flaps. When a longitudinal wound is present, the surgeon makes another, in such direction as seems the most advantageous, with a view to the examination of the bone, and the employment of the trephine. Saving the scalp prevents future deformity, and expedites the healing of the part.

4. After laying bare a depressed fracture, the portion beaten inwards sometimes admits of being raised with an elevator to its proper level, or even quite taken away with a pair of forceps; in which events, trephining will be unnecessary, unless, indeed, the confinement of blood under the bone, and the continuing symptoms of dangerous compression, still indicate the necessity of making a perforation. Frequently, the re-

moval of a depressed piece of the skull may be accomplished, by making a trivial division of a part of the bone with Hey's saws, and the trephine will not be needed.

After exposing the bone, many surgeons, very unnecessarily and wrongly, trouble themselves with scraping away the pericranium, as if it could make any material opposition to the action of the saw. Were such scraping confined accurately to the circle of bone about to be removed, certainly the proceeding might only be objectionable on the ground of inutility and delay. But, when, as generally happens, in the hurry of the operation, the surgeon scrapes the pericranium off a part of the bone, which he does not intend to remove, he is doing a thing which is exceedingly likely to lead to exfoliations. This unpleasant consequence, indeed, must follow the practice, whenever the dura mater is also detached from the inner table by extravasated blood, since the supply of the cranium with blood is entirely furnished by the vessels of these two membranes.

6. When no fracture can be felt, and symptoms demanding the operation exist, the scalp should be divided wherever any wound, contusion, or vestige of external violence, happens to be situated, since extravasations mostly occur under the part where the blow has been

inflicted. Frequently, however, it is otherwise, and the situation of the blood, on the dura mater, can only be found out, as it were, by chance. As far as our experience extends, the extravasation is often in the course of the large artery of the dura mater. In many instances, the blood is effused deeply between the convolutions, or in the substance, or ventricles of the brain, quite out of the reach of surgery. Puncturing the dura mater, when the blood is strongly suspected to lie immediately under it, is considered justifiable practice.

7. In the middle of the piece of bone, which the surgeon designs to remove, he drills, with a perforator, a small hole, in which he places the centre-pin of the trephine. Thus the last instrument is kept steady in its action, until the circular furrow, cut by its teeth, is deep enough to fix it in its rotatory movements alternately to the right and left. The centre-pin must now be taken out, as it is useless; and, if kept in till the inner table was cut, would have the pernicious effect of wounding the brain. The sawing may at first proceed briskly; but, when the furrow is so deep as to make the centre-pin unnecessary, the operator is to work with slowness and circumspection, every now and then examining, with the point of a quill, whether the perforation is at any point com-

plete. When it is, that part of the circle must be sawn no more. Lastly, we shall remark, that it is always better to break a few lamellæ of bone, by forcing out the circle with a pair of forceps, or an elevator, than run the risk of wounding the dura mater.

8. When the edge of the perforation has any inequalities upon it, they are to be cut off with the lenticular, lest they irritate the dura mater.

ULCERS OF THE LEGS.

Common indolent Ulcers of the Legs.

These depend upon a state of relaxation, either general or local, and are intimately connected with an atony of fibre. They are situated on the lower extremities, parts which are very remote from the source of the circulation, and the left leg is asserted to be more frequently affected, than the right. The sores, which now engage our attention, are exceedingly common among persons, whose occupations oblige them to be habitually in an erect position, as printers, &c. When the lower extremities are much exposed to great warmth, besides being kept in a vertical posture, as is the case with cooks, these ulcers are very likely to happen, if we can believe the observations

of Richerand. The same author also alleges, that persons, who stand a good deal in the water, are exceedingly liable to the disease, and that it often affects men, who walk long journies, and have any scars upon their lower extremities. Hence, washerwomen, and persons employed in the management of floating timber, or in breaking up old ships, are observed in France to be frequently afflicted. However this may be, there can be no doubt, that a habit of drinking has a great effect in rendering ulcers on the legs so common among the working classes of society. The sores, when not the consequence of a wound, are preceded by an inflammation, more resembling erysipelas, than phlegmon. The skin becomes red and slightly swollen, attended, in some instances, with acute pain, in others with a sense of itching. In such inflammation, which was by Mr. Hunter called *ulcerative*, the action of the absorbent vessels of the part is preternaturally increased, and having the power of taking up even the solids, they remove a greater or lesser portion of the cutis. While this ulcerative absorption is taking place, the acuteness of the pain is in proportion to the rapidity of the process. The subcutaneous cellular membrane being exposed by the destruction of the skin, inflames, suppurates, and produces granulations, while

the sore spreads at its circumference. As soon as the ulcer becomes stationary, its edges swell, rather from œdema, than inflammation; and such change is manifestly owing to a relaxed state of the solids, and to the tardiness, with which the blood returns towards the heart. The tumefaction at the circumference of the sore lasts a certain time; the edges gradually acquire a thickened callous state, and the disease is perpetuated by neglect. The majority of persons thus afflicted, being engaged in laborious pursuits, which they are reluctant to abandon, frequently defer going into an hospital, till the disease has existed many months, or even years. They follow their labours every day, with merely a piece of rag on the sore, and they only seek relief, when the ulcer, irritated by their exertions, inflames, and falls into a gangrenous state. The sore now puts on a livid appearance. Even maggots have occasionally been observed on its surface, whence the appellation of the *ulcus verminosum*, adopted by some authors. The livid colour of ulcers of the legs is supposed to be owing to the slowness, with which the blood returns through the small vessels on the ulcerated surface, and on this account is often suddenly induced by putting the limb out of a horizontal position.

TREATMENT.

1. In general, rest and a horizontal position of the limb materially promote the cure of all ulcers of the leg, whether recent or inveterate, particularly, when the sores have made considerable progress, in consequence of too much exercise, or labour.

2. Since the ulcers are, on their first being placed under surgical treatment, often in a foul, inflamed, or sloughy state, it is a good general rule to begin with employing, for the few first days, emollient poultices, under which may be laid on the sore a small quantity of soft lint. However, when the ulcer is exceedingly painful, the lint may be omitted.

3. If the alimentary canal be disordered, as is often the case at first, mild purgatives, and even an emetic, will be of great service.

4. After a few days, the inflamed and sloughy state of the sore will generally have disappeared, its hard prominent edges subsided, and its size undergone a vast diminution. Relaxing poultices are now to be discontinued, and dressings applied.

5. Soft lint may then be put on the sore, and covered with a pledget of Turner's cerate. In the course of two, or three days, the surface of the ulcer may be sprinkled with a little of the pulv. myrrhæ et lapid. calamin. before

applying the other dressings. When the granulations rise very high, they must be touched with the argentum nitratum, or dressed with the ung. resinæ flavæ containing some of the pulv. hydrarg. nitrat. rub.

6. The dressings should not be left on too long, nor yet renewed too frequently. When the discharge is great, they may be changed often. But, in general, more harm is produced by renewing them too frequently, than too seldom. Magatus relates a case, where he cured a large ulcer on the thigh, by merely dressing it once in three, or four days, after attempts had in vain been made to heal it by more frequent dressings. The generality of ulcers, however, ought to be dressed every day.

7. Much harm is occasioned in practice by the officiousness, with which many practitioners wipe the pus from the surface of the sore, and disturb and irritate the new granulations.

8. When indolent ulcers are joined with an impaired constitution, and general debility, a cure cannot be effected, until the health is improved by tonic medicines, with a generous diet, and a moderate allowance of wine, and other cordials.

9. Extensive ulcers on the legs sometimes

partly heal up with great rapidity, the points of cicatrization occurring in several places on the surface of the sore, as well as at the edges. In these instances, the new-formed parts are apt to be excessively weak, so that, it often happens, that they either slough, or are absorbed again with such quickness, that, all that has been gained in a week, or a fortnight, shall be lost in the course of a single night. This inauspicious event occurs from the most trivial causes, as a slight febrile attack, mental agitation, &c.

10. Ulcers of the legs are sometimes accompanied with a varix of the veins, which occasionally burst, and bleed profusely. Mr. Home has adopted the plan of tying the vena saphena in the ham, in order to cure such sores. Others, as we think with great reason, prefer the use of bandages, or a laced stocking. Desault and Theden reaped great success from this last mode of treatment. We have seen dangerous spasmodic symptoms follow the operation of tying the vein.

11. All indolent ulcers of the lower extremities, not in a temporary state of irritation from imprudent exercise, &c. require a roller. Some tow, or rag, is to be laid over the dressings, for the purpose of catching the redundant dis-

charge, and the bandage is to be methodically applied from the toes to the knee.

12. A very excellent and successful method of treating indolent ulcers of the leg was introduced by Mr. Baynton. It consists in encircling the limb and the ulcer with long broadish strips of adhesive plaster, which are to be of such length as to pass round the member, and leave an end of about four or five inches. The centre of each strip is to be applied to the sound part of the limb, opposite to the inferior portion of the ulcer, in such a manner, that the lower edge of the plaster may be placed about an inch below the lower margin of the ulcer. The ends of the plaster are then to be drawn over the ulcer with as much force as can be done without pain. In this way, the rest of the strips are to be applied, till the whole sore, and two or three inches of the integuments above it, are covered. The member is then to have pieces of soft calico laid over it, and is to have a bandage applied from the toes to the knee. When the parts are inflamed, the discharge is profuse, or the plasters create irritation on being removed, these and the bandage are to be kept wet with cold spring water. By this plan, the worst cases may generally be cured without pain or confinement. A great recommendation of the method arises

from the fact, that old, indolent ulcers, when healed, while the patient stands up and walks about, do not so readily break out again, as the same sort of sores, cured while the patient lies in bed.

VENEREAL ULCERS.

When the venereal virus is applied to parts, a peculiar sore, called a *chancre*, is apt to be occasioned; and when any of the poison is taken up by the absorbents, the disease manifests itself in the form of buboes, sore throats, eruptions, nodes, pains in the bones, and what are termed, secondary venereal ulcers. The primary sore, or chancre, which is the direct effect of the application of the virus, usually occurs on the genitals, after they have been exposed to the infectious matter in coition.

2. Coition, however, is not the only way in which a chancre may be communicated. Whenever venereal matter accidentally comes into contact with any part of the skin, where a scratch or cut exists, or whenever such matter is applied where the cuticle is thin and moist, a chancre is likely to be the consequence. Dr. W. Hunter used to mention in his lectures, that a midwife in extensive prac-

tice, caught a chancre on the fore-finger of her right hand in examining a pregnant woman who had the venereal disease, and that, before she found out the real nature of the complaint, she infected no less than eighty pregnant women, whom she was desired to attend.

3. A chancre is not, however, an invariable consequence of venereal matter being applied to the surface of the body. Certain individuals cohabit with diseased women with impunity, and it is said, that they are in general robust subjects who have a short prepuce, and of course, the glans penis always uncovered. No doubt, also, the action of the virus is occasionally prevented by washing the parts, the intervention of the cuticle, &c.

4. It appears to be acknowledged, likewise, that the venereal virus may sometimes be absorbed, and syphilitic complaints follow such absorption, while no chancre, nor breach whatever, occurs in the situation where the infectious matter was first applied. This circumstance is of much importance, since it prevents us from inferring with certainty, that a complaint is not venereal, merely because the patient seems never to have had a chancre.

5. A chancre may be expected from the patient's having had a suspicious connexion, and from the sore being situated on parts,

which are most liable to come into contact with the virus, as the glans penis, the inner surface of the prepuce, &c. The manner in which it begins and forms, by eating away the parts, as it were, and the way in which it increases much more in diameter than depth, tend also to evince its character. It is mostly preceded by a small pustule, which breaks and discharges some limpid fluid. Its aspect, and the state of the surrounding parts, are peculiar. It is generally of a round shape, and its edges are jagged, and vertical, instead of being shelving, like those of most other sores. Its surface is smeared with a greyish viscid matter, which is in very small quantity, and has a particular smell. Lastly, the parts around and underneath a chancre are inflamed and hard; this induration, which is attended with pain and redness, being always considered strong evidence of the nature of the disease. The matter, secreted by a chancre, contains the venereal poison, and, consequently, is capable of imparting the disease.

6. A secondary venereal sore is almost always one of the effects of the virus being absorbed from the surface of a chancre into the constitution. Sometimes, however, the poison insinuates itself into the system, and gives rise to secondary ulcers, without any primary

one at all taking place. A secondary sore has this essential difference from a chancre, that the matter which it secretes is not infectious. It occurs more readily on mucous membranes, than on the common integuments, and hence, is very frequent on the tonsils and other parts of the throat. Sores of this description are often of a round shape, though, in certain examples, they eat away the parts, like herpetic or phagedenic ulcers, spreading from one part to another, destroying the skin, and healing on one side, while they are extending themselves on another. Richerand has seen ulcers of this kind thus spread nearly all over the patient's body, producing one vast cicatrix. The same writer adverts to a particular species of secondary venereal ulcer, which is of a round shape, and begins to heal at its centre, so that, towards the termination of the complaint, the sore represents an ulcerated circle, including a round cicatrix. When this variety of the disease makes progress, the ulcerated ring becomes larger, while the cicatrix in the centre undergoes a proportional increase of size.

7. When, as often happens, doubts are entertained, concerning a sore being venereal or not, some authors think the effects of mercury a sure criterion of the nature of the disease.

If, say they, an ointment containing mercury, calomel, or any other preparation of this metal, be applied to the ulcer, and prove serviceable to it, by making it assume a vermilion colour, become smaller, begin to cicatrize, and by dispersing the swelling and hardness of the subjacent and surrounding parts, the venereal character of the disease is unquestionable. Certainly, if mercury benefited no ulcers, except such as are decidedly syphilitic, the preceding test might answer exceedingly well. The fact is, however, that this medicine cures numberless obstinate maladies, and, acting as a powerful alterative, improves the appearance of many ill-looking ulcers, which are only suspected of being venereal. The same remarks are applicable to mercury, as being a just criterion of syphilis, when the mineral is introduced into the system, either by frictions, or internal preparations.

8. The difficulty of determining, whether a sore on the parts of generation is truly syphilitic, arises from the occurrence of ulcers of a different nature on the same parts, and even as a consequence of coition. Any kind of irritating matter may produce excoriations of the genitals; the fluor albus, when the discharge is at all acrid, may give rise both to sores, and a running; and some ulcerations are

unquestionably the effect of neglect and inattention to cleanliness.

9. The treatment of venereal ulcers consists almost entirely in making a judicious employment of the various preparations of mercury. Yet, it must be confessed, that there are some ulcers of the venereal kind, which obstinately resist the effects of this medicine, in whatever form it is administered; and, what is worse, are sometimes dreadfully aggravated by a long perseverance in its exhibition. Hence certain authors question the propriety of denominating mercury a *specific* for the venereal disease.

10. When a chancre is small and in an incipient state, some practitioners are inclined to look upon the disease as entirely local, and endeavour to heal the sore as quickly as possible, by touching its surface freely with the argentum nitratum. There can be no doubt, that, previous to the absorption of the virus from the chancre, the complaint must be quite local, and that it is therefore possible to accomplish a cure by destroying the parts affected with the venereal action by means of caustic. Perhaps, it might be preferable to use the kali purum and quicklime, when it is judged proper to make the attempt, since these caustics will destroy the diseased part more quickly,

certainly, and effectually, than the argentum nitratum. Unfortunately, the period, at which the absorption of the virus begins, is so uncertain, that the foregoing method is scarcely ever deserving of such implicit reliance, that mercury need not be employed at all. We have many times destroyed small pustules and ulcerated points on the penis, and effected a lasting cure, without any mercury. We have gratified ourselves with the belief, that these cases were venereal, and that absorption was wholly prevented. Possibly, some of these examples might not have been incipient chancres, and we were deceived. Richerand affirms, that he has often cured chancres with caustics, without exhibiting mercury, and that, as no subsequent symptoms ensued, the cure appeared to be radical. At the same time, he declares, that, in by far the majority of instances, where this treatment was adopted, its success was only temporary, ulcerations of the tonsils, and other symptoms, denoting a general affection of the constitution, coming on soon after the disappearance of the chancre. Hence such practitioners, as choose to attempt the destruction of small chancres, should not abandon altogether the employment of mercury. Moderate doses of the pil. hydrarg. ought, at least, to be administered. We are aware, that objec-

tions of some weight might be urged against the preceding view of the subject. It might be alleged, that the caustic is quite useless, if mercury is to be used, since the chief object of destroying the sore is to remove all occasion for this mineral, and, that if the latter remedy is to be employed, the chancre will heal without the caustic. Nor can the caustic make any difference in the quantity of mercury, which may be required, because, according to received opinions, the effects of the disease are not in a ratio to the quantity of virus absorbed. Yet, the plan has this great advantage, it may sometimes completely prevent the absorption of any of the virus at all; and though mercury is then given unnecessarily, the patient has a double security against the extension of the disease to his constitution.

11. Ever since the time of Berenger of Carpi, who is said by Douglas to have been the first, who ascertained the efficacy of mercury in the cure of the venereal disease, this metal in its reguline state has been well known to possess no medicinal virtue. Its power of acting against disease only exists, when it is in the state of a salt or oxide. Its preparations also have different degrees of efficacy.

12. The most active of all the preparations of mercury is the oxygenated muriate, the

oxymurias, or, as it is generally called, the corrosive sublimate, which is, in fact, a violent poison. Van Swieten is stated to have first exhibited it in the cure of lues venerea. He dissolved it in alcohol, and, diluting this mixture, with a certain proportion of water, prescribed the remedy in a fluid state. The ordinary dose is a quarter of a grain every day; but, the quantity may, in particular instances, be increased to $\frac{1}{2}$ or $\frac{3}{4}$ of a grain every 24 hours. Sublimate is even at the present time usually prescribed after the manner directed by Van Swieten, the solution in alcohol being ordinarily taken either in some warm milk, a decoction of sarsaparilla, or blended with some syrup, which vehicles are supposed to prevent the sublimate from disordering the stomach and bowels. Notwithstanding these correctives, this preparation of mercury should never be prescribed for patients, who labour under any pulmonary affections. It is only proper for subjects, who have constitutions strong, and free from much irritability. Corrosive sublimate, though a powerful medicine, has not so much efficacy in accomplishing a radical cure of the venereal disease, as some more simple and mild preparations of mercury. The convenience and secrecy with which the solution of it may be taken, and the circumstance of a

small phial of it being often sufficient for the cure, are, perhaps, reasons, why it has been extensively exhibited.

13. The muriate of mercury, or calomel, is far less active than the sublimate, and, though now not much used in venereal cases, it is, like every other preparation of mercury, antisyphilitic, and was formerly a good deal prescribed in this country for the cure of lues venerea, as it is even at this day in many parts of the continent. It is commonly directed in the form of pills in doses of from one to three grains. When the dose is larger, purging is almost always excited. Hence, when calomel is given with a view of exciting a salivation, opium must generally be conjoined with it. Calomel has also been mixed with ointment, so as to form a dressing for venereal sores, or admit of being introduced into the system by frictions. A powder for fumigating the body, and thus affecting the system with mercury, may be made by mixing ʒij. of the aqua ammoniæ with ℥vj. of distilled water, and then putting into the mixture ℥iv. of calomel. The ingredients are to be shaken up together, and the powder then separated by a filtre, and dried. Mr. Abernethy has used this preparation with considerable success. The patient sits naked in a machine, like a sedan-chair, with his head

out at the top, and the powder is thrown upon a heated iron, placed at the bottom of the machine. Attempts have been made to cure syphilis by frictions with calomel, on the gums and inside of the lips and cheeks. However, violent and dangerous ptyalisms having been thus often produced, without the disease being radically cured, the method has fallen into disrepute.

14. Sometimes, when patients cannot rub in mercury, or frictions alone do not have sufficient effect, a grain of the red oxide is prescribed every night, frequently combined with opium.

15. The grey oxide of mercury, formed by the trituration of quicksilver with fat, is the most common and efficacious preparation for the cure of the venereal disease. A piece of the ointment, about as large as a nutmeg, is ordinarily rubbed into the surface of the body, for about half an hour, before the fire. When there is a bubo in the groin, the leg and thigh, on the affected side, are to be preferred for the frictions; but, when this is inconvenient, the ointment may be rubbed upon any part of the body. Mercurial ointment, provided the fat is not rancid, which it is very apt to be, makes an eligible application, to both primary and secondary venereal ulcers, when it is spread upon lint. The introduction of mercury into

the constitution, by frictions, with the ointment, is one of the oldest and best methods. When the patient cannot rub in himself, the business may be done by an attendant, who must be provided with gloves, made of oil-skin, or pig's bladder, lest he salivate himself. The frictions have the most effect when made along the inside of the limbs, where anatomy shows that the lymphatics exist most numerously. It is always a prudent maxim to begin a course of mercury in a very gentle way, only small quantities of the ointment being at first employed. Perhaps, half a dram is enough to begin with. Nor need the frictions be made every day, until the ability of the constitution to bear the medicine has been tried. Thus the patient may commence with rubbing half a dram of the ointment on the inside of the leg. After letting one day intervene, he may make the second friction on the inside of the thigh. When another intervening day has elapsed, the third application of the ointment may be made to the hip and lower part of the abdomen. The fourth friction may be made on the arms, unless the patient should prefer beginning again on the leg. The patient should now and then, during this employment of the ointment, go into the warm bath, if convenient, and have any costiveness obviated by mild

purgatives. The preceding method is generally commendable, because it removes all chance of too sudden and violent a salivation. However, there are examples, in which the affection of the system with mercury ought to be expedited, for the purpose of preventing the serious consequences, which might arise from the spreading of venereal ulceration in particular situations, as where an ulcer in the throat threatens to destroy the whole velum pendulum palati, &c. It is highly proper, that the patient should have some tenderness of the gums, and a copper taste in his mouth; but all violent salivations, attended with extreme soreness of the mouth, and swelling of the face, are condemned as unnecessary and hurtful, by all the most judicious practitioners of the present time.

16. The grey oxide of mercury, made by triturating quicksilver with sugar or honey, composes the common pil. hydrarg. or blue pill, which, in ordinary cases, is the best mercurial medicine for internal use. It is given, either to assist the action of the ointment, or when the frictions cannot be executed. The dose is ten grains every night, opium being added, when any griping or purging is excited.

17. Exposure to a damp cold air determines the action of mercury violently to the mouth, and equally prevents its effect upon the disease,

Hence patients, undergoing a course of mercury, have usually been kept to their chambers, warmly covered with flannel. The surgeons in France, however, while they censure exposure to damp and cold, seem to consider much clothing, and a very warm atmosphere, also objectionable, by bringing on a premature and excessive salivation. The necessity of patients confining themselves to their room cannot be too forcibly enjoined, whenever a mercurial course is necessary.

18. Bathing the feet in warm water, clysters, and cathartics, are the means usually resorted to for checking an immoderate salivation. Richerand affirms that a more efficacious plan is to apply pounded ice to the jaw, and wash the mouth with cold acidulated gargles.

19. The precise manner, in which mercury acts in resisting the venereal disease, is involved in doubt and obscurity. Some writers conjecture, that it must neutralize the virus, just as an alkali destroys an acid. Others, with more appearance of reason, account for the action of mercury on the disease by the quantity of oxygen, which it carries with it into the system, and from which it is there easily separated. The latter opinion led to the trial of nitric lemonade instead of mercury, and of fat oxygenated with nitric acid, which is well known

to contain a large proportion of oxygen, feebly united with azote. The nitrous and nitric acids, water saturated with the oxygenated muriatic acid, and the oxygenated muriate of potassa, were tried with some degree of success, by Cruickshank. But, mercury, having been found to possess superior and more regular efficacy, is still regarded as the only medicine to be depended upon for the cure of the venereal disease. Experiments, confirming the superior efficacy of mercury, were made, for the space of a year, in the hospital of the Ecole de Médecine, at Paris, before a committee of gentlemen nominated for the purpose. Some patients derived only temporary relief from the oxygenated fat, and nitric lemonade; a very few got quite well; while others, after appearing to be entirely rid of the disease, suffered such relapses, as evinced the superiority of the ordinary method.

20. Secondary venereal ulcers are generally longer in getting well, and more difficult to heal, than chancres, especially when situated on the skin. They seldom exist as the sole complaint, being mostly accompanied with sores on the forehead (corona veneris), and other parts of the body, thickenings of the periosteum, nodes of the cranium, clavicle, tibia, sternum, ulna, &c. violent nocturnal pains in the bones; an affection, which is increased by

the warmth of the bed-clothes, and admits of no palliation from sedative medicines. When the disease has advanced to this state, it rarely happens, that the patient has not already rubbed in some mercury, or taken the sublimate, &c. When these imperfect attempts at relief have been made, the disease becomes more obstinate, and difficult to be eradicated. However, the surgeon must commence the treatment again with frictions, at the same time prescribing a decoction of bark, sarsaparilla, or guaiacum.

21. Obstinate venereal ulcers occasionally occur, which resist the effect of mercury, and, under its employment, spread with greater rapidity, and assume a more malignant character. When mercury in all its forms disagrees with the patient, the surgeon is to be content with ordering such medicines as guaiacum and sarsaparilla.

22. When a venereal ulcer is attended with a painful node, which deprives the patient of his sleep, the tumor may be covered with a mercurial and opiate plaster, and some laudanum may be given every evening.

23. The occasional failure of mercury, in curing venereal affections, is imputed, by Richerand, to errors of regimen on the part of the patients, to their irregularity in

using the medicine, and their reluctance to persevere in its employment, for some time after the symptoms have disappeared; a precaution, however, which is absolutely necessary to eradicate the disease. A salivation, hastily excited, and long continued, and the purging, vomiting, and sweating, induced by too powerful doses of the mineral, are other causes of its failure. Besides, a frequent repetition of a mercurial course may habituate our organs to this medicine, and make them insensible of its action. Hence patients who have never been salivated before, are generally cured with most ease; and, sometimes, it becomes necessary to suspend the use of mercury, and give the system time to recover a susceptibility of the impression of that mineral.

24. Mercury not only may fail in curing venereal ulcers, and other syphilitic symptoms, but may actually occasion afflictions as bad as the disease for which it is prescribed. When its employment is obstinately continued, from being useless it becomes hurtful, altering the character of the ulcers, increasing the pains, and occasioning convulsive or paralytic affections, anxiety, trembling, oppression of the chest, and sudden death on making any trivial exertion. The latter state has been called the *mercurial erethismus*. The exhibition of mer-

cury invariably produces in the best constitutions manifest marks of debility. Astringent and tonic medicines, plenty of fresh air, acid drinks, &c. are the most eligible means for removing the bad effects of mercury on the system. When the patient has regained a degree of strength, should any venereal symptoms still remain, mercury may be used again, or such medicines as nitric acid, guaiacum, sarsaparilla, opium, and volatile alkali be exhibited.

WHITE SWELLINGS.

SYMPTOMS, &c.

WRITERS describe two principal varieties of this disease: in one the distemper is represented as beginning in the ligaments; in the other, as first affecting the bones. In the early stage of the first example, the patient is said to suffer a kind of pain, which seems to be in the bone itself. The joint can be bent, or extended, with the most perfect ease; the parts can be handled without pain; and the integuments, being unaffected, admit of being pinched up with facility. According to Mr. Crowther, as the disease advances, the soft parts participate in the malady; and fluids are effused within the articulation and different parts about the joint.

The distention increasing, the joint becomes painful to the touch, or on motion; inflammation at length supervenes, and ulceration follows. Should the parts now be exposed by dissection, the ligaments will be found in a thickened state, and sometimes destroyed; and, in diseases of the knee, the interarticular cartilages are absorbed. The articulating surfaces are more or less carious, and deprived of their cartilaginous investment. The soft parts also undergo a change, in consequence of what happens to the joint. The integuments manifest a puffy appearance; fluid collects beneath them; inflammation takes place, and suppuration follows. Too often, the irritation and discharge together destroy the patient, or oblige him to submit to amputation. In that species of white swelling, which is called scrofulous, and which is supposed to have its first commencement in the heads of the bones, the sufferings of the patient are in the beginning so slight, that the swelling of the joint is often the first circumstance, which excites attention. The skin is pale-coloured, and, on being pinched up, seems thickened, though not œdematous. Mr. Crowther notices, as a remarkable circumstance, that, in this indolent sort of white swelling, the bones sometimes become carious, and the ligaments diseased, even before much uneasiness

has been experienced; nor is the health so materially hurt as might be supposed. But, when the complaint makes further progress, the joint becomes more considerably distended; the fluctuation of a fluid is more evident; and inflammation and suppuration ensue. It is at this time, that the patient's health particularly suffers. The pain, which is first felt, seems always to be within the joint. In the advanced stage, the swelling has a peculiar elastic feel, and so considerable is the thickening of the soft parts, that practitioners have commonly supposed, that the heads of the bones are actually expanded; an error, however, which has been lately exposed. (See Crowther on White Swelling,—S. Cooper on Diseases of the Joints.) These parts are softened, carious, and, often studded with bony irregularities, but seldom or never really widened.

CAUSES.

The scrofulous white swelling mostly afflicts young subjects, and can only originate in a strumous constitution. When a disposition to scrofula prevails, a blow, or fall on a joint, exposure to damp and cold, &c. may be the exciting cause of a white swelling. In many cases, the exciting cause escapes observation. Those white swellings, also, which are mani-

festly not scrofulous, seem occasionally to be the consequence of external violence, cold, damp, &c. applied to the joints, or of fevers; while, in some examples, the disease appears to come on spontaneously.

TREATMENT.

1. When a white swelling is attended with a degree of acute inflammation, denoted by extraordinary heat of the integuments of the joint, pain and tenderness of the soft parts, &c. several leeches may be applied every day to the part, which may be covered with a soft emollient poultice, or with linen wet with the saturnine lotion. At the same time, the patient is to be kept continually in bed, with his limb perfectly at rest, and he should be gently purged with neutral salts.

2. Too much time is not to be spent on this plan. As soon as the heat and tenderness have subsided, it is the surgeon's duty to recommend the application of blisters, or issues, to the integuments of the joint, without further delay. From these, a discharge is to be kept up, by means of savine cerate, or peas, for a considerable time, that is, until the swelling and pain have gone off, and the disease is effectually checked and removed. In the meanwhile, such medicines as the constitution requires must be

prescribed, bark, wine, opium, &c. These will be particularly necessary when the hectical symptoms are severe.

3. Too frequently white swellings, especially those of the scrofulous kind, baffle all surgical skill, and reduce the patient to such a state of hectical debility, that, unless amputation is speedily performed, dissolution soon ensues.

WHITLOW.

SYMPTOMS.

A whitlow usually implies an abscess, situated near the end of one of the fingers, or thumbs, very often close to the nail, or even under it. Whitlows, when the matter does not lie more deeply than the skin, are attended with considerable pain and throbbing in the part affected, and, frequently, with a degree of restlessness and fever. But, if the abscess is situated within the sheath of the flexor tendon, the symptoms may be excessively severe. The matter will be long in making its way to the surface, and, increasing in quantity, may spread to a vast distance up the hand and arm. The disease often destroys the nail, and not unfrequently renders the finger-bones carious.

CAUSES.

Many whitlows seem to arise from internal causes, which cannot be rationally accounted for. But, the disease often proceeds from external causes, such as a contusion, a wound, or puncture, or the lodgment of a needle, thorn, or splinter, in the part, &c.

TREATMENT.

1. When the pain and other symptoms are mild, a few writers recommend an endeavour to resolve the inflammation, by applying to the part camphorated spirit.

2. In general, a poultice is necessary, until the matter is formed, when the abscess should be opened without delay. As poultices often occasion an enormous thickening of the cuticle, common dressings should be substituted for them as soon as possible. Frequently, a bit of the nail will create great pain and irritation, until it is carefully cut away with scissors. All extraneous substances require to be immediately extracted, if possible. The hand is also to be kept in a sling.

3. Besides this topical treatment, some general means are proper, as the exhibition of a dose or two of purgative salts; and, when the pain is very great, of laudanum.

WOUNDS.

1. Simple or *incised* wounds are generally produced by sharp-edged cutting instruments; are seldom attended with loss of substance; and, for the most part, admit of being healed without suppuration, or, by what is termed *union by the first intention.* When a sharp-edged weapon is applied to the surface of the body, with a certain degree of force, it penetrates more or less deeply, and occasions a solution of continuity, which manifests itself by a separation of its edges, depending on the elasticity and contractile properties of the divided parts; by an effusion of blood from the cut vessels; and by pain, arising from the injury of the nerves. The first duty of the surgeon, in the treatment of incised wounds, is to tie such vessels as are large enough to require a ligature. When of considerable size, the mouth of the bleeding artery may be raised with a pair of forceps, for the purpose of having a ligature put round it; in other instances, the tenaculum is the most convenient instrument. Large vessels should always be tied with round firm ligatures, of not too clumsy a thickness, and with sufficient force to produce a division of the inner and middle coats of the vessel. When the cut arteries are not of an important size,

the employment of ligatures may be dispensed with. The sides of all incised wounds should be evenly placed in contact, without delay, and kept in this state, until nature has accomplished their permanent union. In order that the plan may succeed, it is essential that the lips of the wound directly touch each other, and that they be separated by no interspace, nor extraneous substances. Hence, when any dirt, bits of glass, &c. lie in the wound, they must be carefully washed away, or picked out. Success will also be promoted by the surfaces being still so recently cut as to bleed a little, and by their not being contused, nor inflamed. We will not enter into the question, whether a part totally detached from the body has ever united to it again, after having been quickly replaced. The principal arguments in favour of this controverted point, are deduced, first, from Garengeot's case, where a soldier's nose was bit off, yet, on being replaced, became united again. Secondly, Hunter ascertained that the testicles of a cock, when introduced into the abdomen of a hen, became adherent to the surface of the viscera. Thirdly, the last celebrated surgeon found, that a sound tooth might be transplanted from its socket, and acquire an union in the alveolary process of another person. Fourthly, the fact that a spur of

a cock may be cut off, and made to grow on his head, is universally known. We shall only add our own belief, that the evidence on record is sufficient to justify sometimes an attempt to effect the union of a piece of a nose, finger, &c. which has just been cut off, especially since, in the event of a failure, no particular harm is done; and, at all events, more decisive information is a desideratum. Whenever a flap of skin retains ever so small a connexion with the rest of the integuments, its preservation ought constantly to be attempted. Whenever a wound seems capable of being united by the first intention, all greasy applications and vulnerary balsams are highly improper, as being creative of irritation and suppuration. For the purpose of maintaining the edges of a recent incised wound, in that direct contact which is essential to their prompt union, there are four principal means, viz. *position, the uniting bandage, strips of adhesive plaster*, and *sutures.* Position may have immense effect in increasing the difficulty or ease of bringing the sides of a wound into contact. Were a wound made across the fore part of the thigh, extending the leg materially facilitates the bringing the edges of the division together. On the other hand, were the wound longitudinal, the approximation of its sides together would be pro-

moted by bending the leg, and extending the thigh on the pelvis. Position alone is never trusted to for the union of wounds, and is only an auxiliary to some other proceeding. Very often the operation of position may be materially assisted with a common roller and compresses, skilfully applied, or with the uniting bandage, which is made by placing the middle of a double-headed roller on the limb or body, directly opposite the injury, bringing the heads to each other, over the wound, and then cutting a slit in one part of the bandage for the passage of the other. This plan is repeated till the necessary extent of the body, or member, is covered with the circles, a compress being first laid over each side of the wound. The uniting bandage is particularly suited to longitudinal wounds, cases, in which it may render sticking-plaster almost unnecessary. Strips of adhesive plaster, aided by position and the pressure of compresses and a roller, are the most extensively used for maintaining the edges of wounds in contact. They are employed both for uniting accidental cuts and the wounds occasioned by amputations, and the majority of surgical operations. As they only act by means of their adhesion to the cuticle, their length and breadth ought in some measure to be proportioned to the difficulty of keeping the sides of the wound ap-

proximated. Sutures, which are another means of uniting wounds, are only proper in a few cases, where the object of accomplishing a very exact union overbalances the pain and irritation, which sutures constantly excite, and where peculiar difficulty occurs in keeping the parts in contact, by any other means, with sufficient steadiness for the process of union to follow. Wounds of the lips, and of the parietes of the abdomen, on such principles, require sutures. They are generally used after the operation of castration. They certainly are not necessary for most wounds of the scalp, though often considered so. The suture commonly employed, is termed *interrupted*, and is executed with a needle of a semicircular shape, having a sharp point, two cutting edges, and a single ligature attached to its eye. The edges of the wound being held together, the ligature is to be carried, by means of the needle, through them both. The needle, for instance, is to be pushed into the right lip of the wound to the necessary depth; its point is then to be inclined upwards through the left lip, till it emerges from the flesh, when the instrument is to be withdrawn and cut off, leaving the ligature behind, which is usually tied in a single bow. The number of stitches is always in proportion to the length of the wound; but it is a rule

always to be content with as few as possible. Union by the first intention seems to be preceded by an effusion of coagulating lymph, which agglutinates the sides of the wound together, and seems to form the medium, by which the vessels and nerves of the divided surfaces have their connexion established again. The principal general means, requisite in the treatment of incised wounds, are rest and a spare diet; but, when the wound is large, and the patient strong and plethoric, gentle purgatives, and even bleeding, may be proper.

2. *Punctured wounds*, or *stabs*, have at all times been considered as cases likely to be attended with serious and alarming consequences; and, hence, measures for the prevention of bad symptoms have always been recommended. Stabs are unquestionably highly dangerous, when they extend to a great depth, and injure important viscera. But, doubtless, much exaggeration has crept into this part of surgery. The most puerile apprehensions were entertained, in these cases, from the imperfect division of the nerves, and an imaginary tension of the uncut filaments, as if other wounds regularly extended to a perfect division of all the myriads of small nerves, which must be subjected to injury. Some of the bad consequences of stabs may be more rationally imputed to the

manner in which the fibres of the wounded part are stretched, torn, and contused, and not simply divided. Wounds from bayonets will of course be worse than others inflicted with a sharp-pointed sword. The danger of stabs, however, always depends more on the nature of the parts wounded, than any thing else. A punctured wound, interesting the axillary plexus of nerves, or any of the thoracic or abdominal viscera, must be far more perilous, than cases, where merely the skin, fat, and muscles are injured. The treatment of most stabs is restricted to the application of superficial unirritating dressings and a roller, and the employment of antiphlogistic means, especially bleeding and gentle purging, with low diet, rest, &c. When the pain is very great, opiates must be given, and the pressure of the bandage must not be considerable. In favourable cases, stabs heal up without the formation of abscesses. In other instances, extensive swelling and inflammation, with violent febrile and convulsive symptoms, take place, followed by large suppurations, and occasionally by gangrene and death. Whenever matter forms, the surgeon must open the abscess early, and maintain an outlet for the discharge, till the suppuration ceases to be profuse. In all cases, where the inflammation runs high, and is likely to end in

suppuration, emollient poultices and fomentations are indicated. Leeches, bleeding, gentle purgatives, anodyne draughts, and febrifuge medicines, will also be frequently proper. There are practitioners, who are absurdly fond of dilating stabs, and of drawing setons through them; but, such methods are daily giving place to milder and more rational plans.

3. *Contused wounds* do not admit of an union by the first intention, like simple cuts; or such union at most is only practicable at their deeper part, to which the greatest violence of the blow did not extend. However, under these circumstances, it is desirable to attempt to effect an union of as much of the wound as we can; for, though only the bottom unite, a great advantage is obtained. Yet, it should be remembered, that the surgeon is never warranted in making much pressure on the bruised edges of the wound: these must inevitably undergo a great deal of inflammatory swelling, to which any degree of constriction would be highly pernicious. When the wound is excessively contused, its sides, instead of uniting, will slough. In all serious contused wounds, bleeding is indispensably necessary. The part may be dressed with pledgets of simple cerate, over which may be put a common poultice. A strip or two of adhesive plaster, may now and then

be applied advantageously for diminishing the exposed surface; but, be careful that they make no constriction. In bad cases, it is better, indeed, to dispense with them, until the first dangers of inflammation and sloughing are over.

4. The excessive contusion accompanying *gunshot wounds* is owing to the rapidity, with which an obtuse body is projected into the injured part. Indeed, the fibres, which the ball touches in its track, are mostly converted into a dark-coloured eschar, which is the effect of the great violence, and not of the heat of the ball, as some have erroneously conceived. Gunshot wounds do not bleed, except when very large blood-vessels are injured; they are livid at their circumference; and their infliction is said to be sometimes attended with so forcible a concussion, as paralyzes the part, and even the whole animal economy. Bullets and canon-balls occasionally produce serious mischief, without making any breach in the skin. The muscles and bones may be broken to atoms, without the integuments being wounded. This sort of accident is explicable by the oblique passage of balls over the surface of the body, although it is now and then occasioned by a spent cannon-shot. Bad gunshot contusions are frequently followed by gangrene.

Gunshot wounds may have either one, or two apertures, according as the ball has lodged, or passed quite through the part. In some cases, the openings are diametrically opposite each other; in others they are not so, the direction of the ball having been changed by the resistance, which it has met with from a bone, cartilage, tendon, &c. Thus a ball has been known to enter just on the inside of the ankle, and come out near the knee, to enter the forehead and come out at the temple, &c. The opening, where the ball enters, is always smaller than that from which it escapes, and its margin is forced inwards, while the circumference of the other aperture is quite prominent. The contusion and injury, which the parts suffer, are also greatest about the entrance of the ball, owing to the more considerable impetus, with which it moves. The yellowish livid hue, around gunshot wounds, is a sort of ecchymosis, or extravasation of blood. The injured member is often benumbed and stupefied, and, when mortification occurs, it spreads with extraordinary rapidity. When the whole constitution is thrown into this kind of torpor, the most fatal consequences are to be apprehended. Shiverings, syncope, and nervous symptoms are apt to come on quite suddenly in cases of gunshot wounds. Such occurrences

made the ancients suspect, that something poisonous was carried into the wound; an opinion, which is now well known to be erroneous. When there is only one opening, we may infer, that the wound contains a foreign body. When there are two apertures, the ball has escaped; but, pieces of the clothes may still lodge in the part. The primary indication in the treatment is to extract all extraneous substances. Various instruments for extracting balls are in use, made on the principle of forceps, spoons, or gun-worms. When the finger can be used, it is to be preferred to them all. If a ball cannot be extracted, without creating a great deal of irritation, it is better to defer the attempt, till a future and more favourable period. When a ball goes nearly through a part, and lodges under the integuments, Hunter was against cutting it out; but some others, as Richerand, recommend the extraction by a counter-opening. Smooth round bullets often lodge, without giving much pain, or uneasiness. But, rough angular substances, pieces of clothes, and splinters of bone, produce greater irritation, and therefore, their extraction is a matter of higher importance. A material question, in this part of surgery, is, whether it is proper to dilate all gunshot wounds? This practice has been

ceedingly general, from an idea, that by cutting open the orifice of the wound, the extraction of foreign bodies, and the escape of matter and sloughs, were facilitated, while all constriction of the parts was obviated, in the event of great swelling taking place. The dilatation is by some surgeons totally condemned, while others admit its utility, where a ball has passed through a very fleshy part, which is covered by a thick aponeurosis. Here the practice is defended on the principle of removing all tension of the aponeurosis, so that the swollen muscles may not suffer such constriction, as might terminate in gangrenous mischief. Richerand advises the fascia to be slit open, to the extent of several inches, with a probe-pointed bistoury, and dilating the wound as deeply as possible. On what principle this last proceeding is necessary, is not clearly explained. Some surgeons, after dilating gunshot wounds, have drawn setons through them, in order to facilitate the escape of the matter and sloughs. A seton, however, acts like a foreign body, produces considerable pain, irritation, and inflammatory swelling, and is, therefore, hurtful. It must rather obstruct, than promote the escape of sloughs; nor can it be necessary for promoting the exit of the matter, since gunshot wounds are not much disposed to

close too quickly. When foreign bodies have been extracted, and such a dilatation made, as promises real benefit, the rest of the treatment is similar to that of common contused wounds. Pledgets of lint, spread with simple cerate, are to be applied to the wound, and the surrounding parts fomented for the first twenty-four hours, after which a soft poultice is to be laid over the dressings. In order to avert inflammation, the patient, if young and strong, ought to be freely bled. But while a general, or local kind of insensibility prevails, such evacuations may be omitted. Several authors, who have treated of gunshot wounds, recommend the exhibition of an emetic, on the day of the accident, or on the next, before the access of the inflammatory symptoms. Such practice is said to be highly advantageous in the army, where, the alimentary canal is generally in a foul state, in consequence of bad food, and unavoidable irregularities in diet. Lamatiniere (Mém. de l'Acad. de Chir.) has strongly urged the propriety of such practice, with a view of preventing the common symptomatic fever from changing into a putrid, or bilious one. Febrile symptoms arise, the wounded part swells, suppuration occurs, the eschars are detached, and the wound then falls into a state, resembling that of an ordinary

contused wound, and requiring analogous treatment. In other cases, things do not go on thus favourably, extensive abscesses form, or the wound puts on an unhealthy appearance, or gangrenous mischief arises. Sometimes, a dangerous hemorrhage takes place as soon as the eschars become loose: when this accident is apprehended from the situation and course of the wound, an attendant should continually remain with the patient, and be directed how to act, until the arrival of the surgeon. Gunshot wounds, complicated with fractured bones, are of a very dangerous nature, and frequently require amputation. Bullets, less commonly than cannon-balls, and bomb-shells, occasion such injury. In sea-engagements, highly perilous wounds are produced by the splinters of wood, which are driven about, on a cannon-ball striking the vessel. Many cases, of this sort, attended with a comminuted fracture, and vast contusion and laceration of the soft parts, demand the immediate performance of amputation. There are four species of cases, where this operation becomes indispensable. The first is, where a cannon-ball has torn off a main part of a limb. Here amputation gives the patient an even cut wound, instead of a large torn, contused, jagged surface, complicated with a splintered bone, and from which injury, a reco-

very, if obtained, would only be so after tedious suffering and confinement, and never with such a stump, as would be sound and strong enough to continue long healed and serviceable. The second case is, where a member is so dreadfully injured, that gangrene would ensue. Here the operation should be done at once, ere inflammation has had time to commence. The third case is, where an endeavour to save the limb, and avert mortification, has failed. Here the operation must not be undertaken, before the gangrene stops, and the dead and living parts are evidently beginning to separate. The fourth case is, where the inflammation terminates in a profuse and protracted suppuration, followed by hectical symptoms so urgent as to endanger life. The French surgeons have had great controversy on the question, whether, in cases evidently requiring amputation, the operation ought to be done directly on the field of battle. M. Faure defends the negative; while Lamatiniere espouses the affirmative; and the subject seems yet unsettled. When the hospital is very distant, and the patient must be moved far, in a waggon, it is undoubtedly best to free him from his terribly injured limb, which, by being shaken and disturbed, might fall into a condition, where the operation could be no longer

a means of preserving life. When bones are broken, and it is decided to move the patient before amputating, the limb must be kept steadily in splints.

5. *Poisoned wounds* comprehend the sting of the bee, wasp, or hornet; gnat-bites; cuts received in dissecting putrid bodies; wounds made with envenomed arrows; the bite of the viper, mad dog, &c. It is to the two latter cases, we shall restrict our observations. The viper, of all European reptiles, inflicts the most dangerous bite. This animal's upper jaw is provided with two moveable teeth, which are exceedingly sharp at the point, are grooved lengthwise, and have a vesicle, full of a poisonous liquor, placed under their fangs. When the viper is angry, the teeth are raised, and on their being introduced into the bitten part, the poison issues out through the grooves. The danger of the bite is said to be in proportion to the anger of the snake; for, the more forcibly the bite takes place, the larger is the quantity of the venom, which is expressed, and inserted into the part. The danger is also more or less considerable, in proportion to the time, that has elapsed since the poison was discharged by a preceding bite. The peril seems likewise to be in a ratio to the smallness of the animal, and the terror, attending the

accident, frequently contributes seriously to aggravate the case. Fontana's experiments show, that the bite of a single viper will kill a mouse, pigeon, and other small animals; but, that a man will not die unless bitten by several, and that an ox can only be killed by a still larger number. The prostration of strength, originating from the fright, is said particularly to facilitate the action of the deleterious principle. The symptoms, proceeding from the accident, begin almost immediately. Violent pain, and a rapid inflammatory swelling, take place, attended with livid spots, denoting a tendency to gangrene. Affections of the heart, with debility and vertigo, evince that the virus extends its effects to the whole system. Instilling into the wound a few drops of the liquid muriate of antimony; the application of the actual, or potential cautery; dilating the wound in order to let the caustic be properly inserted; rubbing the circumference with olive-oil and ammonia; bathing the parts in oil; administering cordials, and giving a few drops of aqua ammoniæ in the patient's beverages; are the best methods of preventing the ill consequences of the bite of a viper. The excision of the bitten parts has been suggested; but, the proceeding is, by some, objected to as too violent. A. Paré kept the virus from

entering the system by applying a tight ligature round the part. But, this measure must be uncertain, unless the ligature be so tight, as to create severe pain, and a risk of gangrene. The bite of the viper seldom proves fatal, even when neglected. Olive-oil, and the volatile alkali, applied to the wound, and taken inwardly, seem to have the most efficacy. The eau de luce, which has acquired immense fame, is merely volatile alkali blended with a small quantity of oil of amber.—The *bite of a mad dog* is known to be an accident, which inspires every body with horror, so dreadful and incurable are the symptoms which are apt to ensue. The poison of hydrophobia resides entirely in the saliva of the mad animal. The dog, on being first affected, loses his spirit, and is ill-natured to persons, to whom he was previously in the habit of evincing attachment. He refuses his food, and has the utmost aversion for every thing that looks like a fluid. This dislike of liquids quickly changes into an utter abhorrence of drink, and even of such surfaces, as shine like fluids. At length, he leaves his home, forgets his master and would bite him, and runs furiously at every body he meets. His ears and tail hang down; a viscid foam exists in abundance about his inflamed throat; and, when he is not killed, he dies

at the end of two, or three days. When the human subject is affected, lowness of spirits, and uneasiness concerning the accident, are first observable. A spasm of the throat renders the swallowing of liquids painful. The abhorrence of fluid increases, and a propensity to bite the attendants is not uncommon. The eyes become red; copious perspirations cover the face; the whole body is affected with convulsions; and the patient at length falls a victim to the most violent symptoms. The assemblage of complaints is essential to characterize the disease; for, a mere aversion to fluids, has been seen attendant on particular nervous disorders, and gangrenous sore throats. The bite of a mad dog often heals up, and, it is not till after a week, a fortnight, a month, or more, that the part begins to be painful. It is generally said that a person is not in danger of the disease, unless the saliva gets into the wound; but, a case, recorded in the Acts of the Acad. of Sciences at Copenhagen, seems to refute this opinion, as an hydrophobia was the consequence of a man suffering a dog to lick his hands and feet. However, the inference cannot be drawn, unless there was certainly no cut, scratch, nor pimple, about the patient's skin. Since we have no medicine, capable of curing hydrophobia, the great object in the

treatment is to prevent the poison from extending its effect to the system at all. The most prudent plan is to cut the bitten parts away to the necessary extent and depth. The next most advisable proceeding is a free destruction of the parts with the most powerful caustics; the liquid muriate of antimony is much praised by some French surgeons. We are also advised to keep up a discharge from the wound for some time, in the manner of an issue. The complete removal of the parts with a knife is undoubtedly the safest plan. It is also customary to prescribe volatile alkali, or else direct mercurial frictions. Bleedings, and long immersions of the patient in the sea, have been recommended, though we have no decisive, unquestionable case to prove that these, or any other means, can cure an hydrophobia once positively begun.

6. In transverse *wounds of the throat*, the larynx or trachea is frequently divided. The air rushes through the incision, the voice is lost, and the patient is deprived of the power of articulating words, until the lips of the wound are brought together by bending the head, or approximating the chin to the breast. Ambrose Paré relates the case of a gentleman, who, having cut his throat with a razor, was found alone quite speechless. His servant was taken

up on suspicion of having perpetrated the crime. Ambrose Paré thought, that the wound might be prevented from gaping by bending the patient's head: and, on this being done, the latter was immediately enabled to speak, and declare the innocence of the suspected person. Deep cuts on the forepart of the neck cannot be united without a good deal of trouble, by reason of the difficulty of keeping the divided parts evenly in contact. This observation is true, whether the wound be above the os hyoides, which is uncommon, or whether it interest the larynx, or the trachea. The upper lip of the wound is drawn upwards and forwards by the muscles situated beneath the lower jaw; while the lower lip is pulled downwards and backwards by the muscles extending from the scapula and sternum to the os hyoides. Many excellent surgeons are adverse to the employment of sutures, for the purpose of uniting ordinary wounds of the throat. Others consider the method useful by keeping the skin from forming a fold, which prevents the two bleeding surfaces from touching each other. Whether a suture be practised or not, the patient's head must be raised with pillows, so as to approximate his chin to the sternum, and make the edges of the cut approach each other. Strips of adhesive plaster, a compress

of lint, and a bandage, are then to be applied. When the trachea is extensively divided, and the wound of it very gaping, a suture may be necessary. In every instance, where any considerable branch of the external carotid is cut, the bleeding vessel demands the earliest attention, and should be directly taken up with a pair of forceps, and tied. In cases, where the trachea was almost cut through, and the symptoms of suffocation were pressing, Desault used to introduce an elastic gum catheter, through the wound, into the windpipe, in order to ensure a free passage for the air into and out of the lungs. The irritation of the instrument, in this situation, though at first annoying, soon became very bearable, and, at length, went off entirely. We have never seen an instance, which seemed to require such a proceeding, nor should we be inclined to expect much benefit from it. However, in all wounds of the trachea, and œsophagus, the introduction of an elastic gum catheter down the latter tube cannot be too much commended, as preventing the disturbance of the parts always produced by the convulsive action of deglutition, and enabling the surgeon to inject into the stomach liquid food, and such medicines as may be deemed necessary.

7. *Wounds of the thorax* which go through

the parietes of this cavity, and are of a certain size, allow the air to enter the bag of the wounded pleura, by which means, the lung on the injured side suffers compression, collapses, and is rendered for a time useless in respect to respiration. When both sides of the chest have had an opening made into them at once, the patient must die suffocated, in consequence of the air rushing into the cavity of each pleura, and the right and left lungs falling into a collapsed state. If the thorax were to expand, the air, which has a tendency to enter the glottis, could not now descend into the compressed lungs, there being an equilibrium between that which presses on their external surface, and that which ought to pass down the trachea. When, in experiments upon living animals, an opening is made only into one side of the chest, the animal breathes by the lung of the opposite side, its respiration is hurried, because one lung has to execute the whole function; and the air enters and escapes from the wound with a hissing noise, and with force enough to blow out a lighted taper. If another opening be made into the opposite side of the thorax, suffocation is produced. Similar phenomena happen with regard to the human subject. The signs of a wound having penetrated the cavity of the chest are exceedingly falla-

cious. Neither the direction of the wound, the little thickness of the parietes at the injured part, the injection of a liquid, nor the introduction of a probe, nay, not even the spitting up of frothy scarlet blood, nor its discharge from the wound, can form an unquestionable criterion of the wound having penetrated. The only certain test is the alternate entrance and escape of air from the thorax, in such manner as to agitate the flame of a candle, brought near the wound. When the case is so narrow a stab, that the air cannot insinuate itself into the cavity of the chest, provided none of the thoracic viscera are injured, the accident is scarcely more dangerous, than if the weapon had not penetrated quite so deeply. Nor is it necessary to examine, whether the wound is a penetrating one, or not, since either case requires the same sort of treatment, namely superficial dressings, quietude, and antiphlogistic remedies. When the wound is sufficiently large and direct to let the air pass into the thorax, the edges of the injury may be brought together with sticking-plaster, the part may be covered with a compress, and a bandage applied round the body. The patient is also to be directed to lie upon the wounded side. This is the only way, by which the air can be prevented from entering the chest

With respect to that, which has already insinuated itself, some theoretical authors have talked of drawing it out with a syringe; but, besides the difficulty of accomplishing such a design, the plan is useless, as the air is always absorbed. It sometimes happens, that, in penetrating wounds of the chest, the lung does not collapse, notwithstanding a patent opening is made in the parietes of the thorax. This circumstance occurs, when the lung is adherent to the pleura costalis at the wounded point. Of course, the lung is almost sure to be injured in such a case. Here the treatment should consist of light superficial unirritating dressings, copious bleedings, low diet, acid beverages, &c. The air and blood, which escape from a wounded lung, cannot always readily pass outwards through the solution of continuity in the parietes of the thorax. Hence arise extravasations of air and blood. The first of these cases is elsewhere considered. (See *Emphysema.*) Extravasations of blood in the chest do not invariably depend upon an injury of the lungs. A mere wound of one of the intercostal arteries may give rise to the accident, when the injury is so situated, that the blood can more readily flow inwards, than outwards. However, whether the extravasation proceed from the lungs, or from the parietes of the chest,

it is evinced by the subsequent symptoms. When it takes place rapidly, the patient suddenly turns pale, loses his strength, is affected with syncope, and feels a difficulty of breathing, which every moment increases to suffocation. The ribs are raised and turned out; the hypochondrium, on the affected side, becomes more prominent; the patient feels an unpleasant sensation of weight there; pressure in that place urges the fluid towards the lung, augments the difficulty of breathing, and causes inexpressible oppression. Lastly, when a certain quantity of blood has collected, it sometimes begins to flow out of the external wound. When the extravasation takes place slowly, the symptoms are more equivocal. However, the prominence of the hypochondrium, the sense of suffocation produced by compressing this part, the difficulty of breathing, the inclination of the patient to lie on the affected side, the oppression experienced from lying upon the opposite side, and the absolute inability to continue in this last position, form a tolerably plain diagnosis. The difficulty of lying on the sound side is supposed by Richerand not to depend upon the fluid making pressure on the mediastinum, and lungs; but, upon the resistance then made to the expansion and motion of the uninjured side of the thorax, by

which respiration must be principally carried on. Avenbrugger first noticed another sign of an extravasation of blood in the chest, namely, the kind of sound heard on striking the thorax, which cavity is said to make a peculiar hollow noise, on being struck when there is no extravasation; but, a dull one, when blood is effused. The French attach importance to this criterion; Corvisart is stated to have derived great assistance from it; though, we believe, in this country, the method is more likely to excite smiles, than imitation. Blood, extravasated in the cavity of the pleura, is not only a mechanical obstacle to breathing, it acts also as a source of irritation, sometimes inducing abscesses. The necessity, therefore, of giving issue to the effused fluid is very urgent, since its presence gives rise to so much disorder, and may even bring on fatal consequences. In inconsiderable extravasations, indeed, it has been found, that repeated bleedings, and low diet, have sufficed for the relief of the symptoms, and the dispersion of the extravasated blood. Success from such general means alone can be expected only in very slight cases, and in most instances, it is best to give vent to the effused fluid. When the wound is situated at a depending part of the cavity of the thorax,

a dilatation of it may perhaps answer the purpose. In other cases, the operation of empyema must be practised. But, before it is performed, the practitioner must be sure, that the inward hemorrhage has ceased. This desirable event may be known by the cessation of the primary symptoms, pain, spasms, &c. by the extremities recovering their warmth, the increasing strength of the pulse, the absence of syncope, and the time that has elapsed since the receipt of the wound. We shall conclude these remarks on penetrating wounds of the chest with enjoining the surgeon always to keep in mind, that, in all these cases, the greatest danger, next to hemorrhage, is inflammation of the pleura and lungs, which affection must be averted by copious bleeding, low diet, quietude, and antiphlogistic measures in general.

8. *Wounds of the abdomen*, not extending through the peritoneum, are not materially different from those of other parts, and are to be treated on the principles applicable to wounds in general. It is to be observed, however, that, such cases leave after them a weakness of the parietes of the abdomen, which greatly disposes the patient to a protrusion of the viscera. Firm as the cicatrix may appear to be, it is always apt to form the seat of a hernia, if

the patient neglect to support the weakened point with a bandage. Contusions of the sides of the abdomen are sometimes followed by such an incapacity of resistance in them, that they yield to the pressure of the contained parts, and constitute a particular kind of hernial tumor. Hence, after a wound of the abdomen has been healed by means of position, adhesive plaster, and a bandage, writers generally state, that the patient should be enjoined to wear a belt for supporting the cicatrix. Except when a wound of the belly is attended with protrusion of a piece of intestine, or omentum, the fact of its having penetrated the cavity of the abdomen is generally attended with some obscurity. Authors do, indeed, lay down circumstances of discrimination. We are advised to compare the direction of the stab with the known thickness of the abdominal parietes at the wounded part, and the breadth of the wound with that of the weapon, with which the injury was inflicted. When the instrument has entered perpendicularly at a place, where the parietes are thin, and when, notwithstanding the weapon is narrow, the division is rather broad, it is inferred, that the wound is of the penetrating kind. This mode of judging, however, must generally be exceedingly fallacious, from the frequent impossibility of learning the

exact direction of the thrust, and of obtaining a sight of the instrument. Also, when a probe will pass into the wound for a certain distance, perpendicularly, at a point, where the parietes are not thick, it is concluded, that the injury extends into the abdominal cavity. But, it must not be inferred, that the wound certainly does not penetrate, because a probe cannot be thus introduced. In fact, the layers of muscular fibres not bearing precisely the same relations, which they did at the moment of the accident, soon stop the passage of the probe. When the wound is oblique, a probe can scarcely be made to trace its course. Besides, this instrument causes irritation and pain, and, by disturbing a clot of blood, may renew hemorrhage, or lead to an extravasation in the cellular membrane. The suggestion has been made to inject a mucilaginous liquid, the passage of which into the belly will unquestionably evince that the wound penetrates. Such fluid, however, might not pass into the abdomen, even though the wound penetrated, for the layers of muscular fibres are liable to change their relative position. The liquid might only be injected into the cellular substance, and lead the surgeon to suppose, that the wound penetrates, when it actually may

not touch the peritoneum. Objections to the plan might also be made on the ground of the impropriety of attempting to introduce any kind of liquid into the cavity of the abdomen. The symptoms then of a penetrating wound are not to be depended upon, and the employment of the probe and injections is not free from danger. In sensible, irritable habits, the access of spasmodic complaints forms no sure criterion. The escape of some of the viscera, or else of a fluid secreted by them, is the only certain mark of the accident. It is easily conceivable, however, that a narrow stab may enter the abdomen, without being followed either by a protrusion of the viscera, or any kind of extravasation. But, since such cases only require ordinary antiphlogistic treatment, like superficial wounds, the matter is of little importance. When, in consequence of a breach in the parietes of the abdomen, made with a cutting instrument, a bull's horn, &c. the intestines are protruded at the wound, in an uninjured state, the first indication is to reduce them. With this view, the abdominal muscles are to be relaxed as much as possible, by position. When the parts cannot be easily returned in this way, the wound must be dilated in a direction upwards, but always so as to avoid

the epigastric artery. The reduction having been accomplished, the patient is to be kept in such a position as will relax the abdominal muscles. The wound is then to be closed with adhesive plaster, and covered with a compress and bandage. When it is extensive, sutures will be necessary. The application of them in these cases is called gastroraphe, about which more has been said and written than seems necessary. The omentum, like intestine, demands immediate reduction, if sound. When mortified, the dead portion is to be cut off, and the bleeding vessels tied singly with a bit of thread. When the wound forms a stricture on the omentum, attended with pain, vomiting, &c. the opening should be dilated, and the part immediately returned into the cavity of the abdomen. When a piece of intestine is not only protruded, but wounded, the edges of the division may be prevented from becoming far separated by making a stitch through them with a small needle and thread, before reducing the part. The reduction may then be effected, care being taken to leave the extremities of the thread hanging out of the external wound. All further botching of the bowels is now universally condemned by the most judicious surgeons, as more likely to

hinder the intestinal canal from becoming perfect again, than promote so desirable an event. When the bowel is quite cut across, the surgeon must endeavour to ascertain which is the upper portion, introduce it a little way into the lower one, and then make one stitch or two with a fine needle and thread. The part is then to be returned. The thread will serve to keep it near the wound, which will facilitate the escape of whatever matter may happen to be extravasated.—Wounds of the stomach are not attended with any symptoms, which unequivocally evince the accident, since vomiting, anxiety, the escape of alimentary matter, &c. may originate from a wound of the small intestines. These cases are generally fatal, though a recovery does sometimes happen. The treatment consists in putting the patient on very low diet, bleeding him, allaying his thirst with such fruit as oranges, and applying fomentations. The outer wound is of course to be dressed.—Deep wounds of the liver, and especially wounds of the gall-bladder, prove fatal, by giving rise to an extravasation of bile, a secretion, which, when it gets into contact with the peritoneum, soon brings on such inflammation as rapidly destroys the patient. —We shall conclude with remarking, that all

deep wounds of the abdomen invariably require a most rigorous adoption of the antiphlogistic treatment: the chief danger, when the patient does not quickly expire of internal hemorrhage, being generally peritonitis.

THE END.

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